Sem. I **Hours/Week: 6**
14PBC1102 **Credits: 5**

MOLECULAR BIOLOGY

Objectives

i) To understand the basic structure and functioning of the genetic materials - DNA.
ii) To understand the changes in the genetic material and the consequences in plants and human.

Unit I

Terms and definitions - DNA is the Genetic Material: Griffith's Experiment, Avery, Hershey & Chase Experiment. RNA as the Genetic Material: Conrat & Singer Experiment with TMV - Central Dogma. Viral genome - types of RNA and their role. Organization of Chromosome: Structural organization of eukaryotic chromosomes. Types and basic structure of chromosomes.

Chromosomal proteins - histones and protamines - nucleosomes - levels in the organization of Metaphase Chromosome. Organization of prokaryotic DNA. Special types of chromosome: polytene and lamp brush chromosomes. Duplication & segregation of chromosomes. Components, types & structure of nucleic acids, C-value paradox.

Unit II

Transposons: Discovery, IS elements, transposons in bacteria (Tn elements), Maize (Ac/Ds and Sp/Dsp elements), Drosophila (P elements) and Yeast (Ty elements). Transposition, genetic and evolutionary significance of transposons. Extra chromosomal DNA: Maternal Inheritance. Structure, gene contents and functions of chloroplast and mitochondrial DNA - Interaction between cpDNA and mDNA, theory of prokaryotic endosymbionts. Plasmids: definition, types, structure, properties and gene content. Use in rDNA technology.

Unit III

DNA replication: Models - Messelson & Stahl experimental proof for semi-conservative replication - rules, requirements, problems and molecular mechanism of the replication of linear and circular (Rolling circle Model) DNA. DNA polymerases - structure and function. Replication of RNA - RNA and DNA mediated. Recombination: Homologous and non-homologous recombination- Site specific recombinations & transposition of DNA.

Unit IV

Transcription: RNA types (tRNA, mRNA, rRNA, Ribozyme, snRNA, hnRNA, RNAi, RNA-P and micro RNA), structure and functions. Transcription mechanism in prokaryotes and eukaryotes - initiation, elongation and termination, Post transcriptional modifications. Antibiotic inhibitors of transcription. Translation: genetic code and features. Wobble hypothesis. Translation machinery, initiation, elongation and termination of translation in bacteria and eukaryotes. Translational proof reading, translational inhibitors, post-translational modifications, chaperones and protein targeting- translocation, heat shock proteins, glycosylation; SNAPs and SNAREs. Bacterial signal sequences. Mitochondrial, chloroplast and nuclear protein transport. Endocytosis - viral entry. Ubiquitin TAG protein destruction.

Unit V

Chromosomal changes and consequences: changes in the chromosome number: euploidy and aneuploidy and related genetic disorders. Changes in

the chromosome structure: addition, deletion, inversion and translocation and related genetic disorders. Mutation: definition, chemical basis and types. Mutagens: physical and chemical. Mutant types - lethal, conditional, biochemical, loss of function, gain of function, germinal verses somatic mutants, insertional mutagenesis. DNA repair mechanism: thymine dimer, light activation, excision, recombinational, SOS and mismatch repair. Cancer Biology: genetic rearrangements in progenitor cells, oncogenes, tumor suppressor genes, cancer and the cell cycle, virus-induced cancer, metastasis, interaction of cancer cells with normal cells, apoptosis, therapeutic interventions of uncontrolled cell growth.

Books

1. David Freifelder, 2008. Molecular Biology. (Ed: 2). Narosa Publications, New Delhi.
2. Gardner, Simmons and Snustad. 2004. Principles of Genetics. John Wiley & Sons, NY.
3. Jeoffrey M. Cooper & Rober E. Hausman. 2000. The Cell: A Molecular Approach ASM Press, Washington D.C.
4. Watson J.D., et al. 2006. Molecular Biology of the gene (Ed. 5) Pearson Education, UK.

References

1. Ajoy Paul. 2007. Textbook of Cell and Molecular Biology. Books and Allied, Kolkata.
2. De Robertis and De Robertis. 1990. Cell and Molecular Biology. Saunders, Philadelphia.
3. Gerald Karp. 2008. Cell and Molecular Biology. (Ed: 5). John Wiley and Sons, New York.
4. Krebs,J.E. et al. 2011.Lewin's GenesX.(Ed: 10).Jones and Barlett Publishers, US.
5. Tom Strachan and Andrew P Lead. 2004. Human Molecular Genetics (Ed: 3). Garland Science/Taylor & Francis Group. USA.
6. Twyman. 2003. Advanced Molecular Biology. Bios Scientific Publishers LTD. Oxford, UK.

Sem. I
14PBC1106 **Credits: 2**

Self Paced Learning

BIOCHEMICAL CALCULATIONS

Objectives

i) To make the calculations, part of the curriculum.

ii) To enhance the calibre of the students in calculation, through their own effort.

Unit I

Acids, bases and buffers: Preparation of solutions: volume by volume, weight by volume, molar, molal, normal, formal, ppm solutions. pH and pOH. Definition and calculations. H-H equation. Buffer solutions - phosphate, Tris-HCl, Acetate buffer preparation. Titration curves. Buffering capacity. Factors affecting solubility- saturated solution. Isoelectric pH-definition and calculation of pI of amino acids.

Unit II

Biomolecules-concentration and molecular weight: spectrophotometric determination of concentration- Lambert-Beer's law, colorimetry. Calculation of absorbance and transmittance. Determination of molecular weight using molar extinction co-efficient. Determination of molecular weight (carbohydrates, proteins, nucleic acids and lipids) - from composition, sedimentation velocity, gel electrophoresis, affinity labelling and osmotic pressure.

Unit III

Enzymology and bioenergetics: Derivation and Applications of Michaelis - Menten equation. Inhibition kinetics- competitive, non-competitive and uncompetitive. Calculation of Specific activity, turn over number, IU and KATAL units (alkaline phosphatase, SGOT, & SGPT). Free energy - calculation of free energy change; relationship between equilibrium constant and free energy change (Gibbs).Calculation of equilibrium concentrations. Calculation of ATP yield and utilisation - glycolysis, TCA cycle, fatty acid oxidation, proteins and nucleic acid synthesis.

Unit IV

Radioactivity: Types of radioactive decay - alpha, beta and gamma particle emission. Measurement of radioactivity - units, Curie, Becquerel. Half life-definition. Derivation of equation for half life. Determination of decay

constant of various radionuclide and age of archaeological samples (Radiocarbon dating). Determination of blood volume.

Unit V

Nutrition: Calculation of acid value, saponification number and iodine number of fat and their applications. Calculation of respiratory quotient and calorific value of carbohydrates, proteins and lipids- Bomb calorimeter. Determination of BMI. Determinations of body fat- measurement of skin fold thickness and circumference. Determination of ash and moisture content of foods.

Book

1. Irwin H. Segel, 2004, Biochemical Calculations 2nd Edition, John Willey & Sons, India.

References

1. Upadhay and Upadhay Nath, 2014, Biophysical Chemistry, Himalaya publishing, India.
2. Plummer Mu and Plummer, 1988, Introduction to practical biochemistry, Tata McGraw Hill Publishing Company, India.
3. Markus R Wenk and Aaron zefrin Fernandis eds, 2013, A manual for biochemistry protocols, National University of Singapore, Singapore.

Sem. I **Hours/Week: 4**
14PBC1201A **Credits: 4**

DEVELOPMENTAL BIOLOGY

Objectives

i) To study the cellular basis of development.
ii) To elucidate the early developmental process of humans.

Unit I

Basic concepts: General concept of organisms development: Potency, commitment, specification, induction, competence, determination & differentiation; morphogenetic gradients; cell fate & cell lineages; genomic equivalence and cytoplasmic determinants; imprinting. General principles of cell-cell communication in development: cell adhesion and roles of different adhesion molecules, gap junctions, extracellular matrix, integrins, paracrine factors.

Unit II

Fertilization, development and sex determination in humans: Gametogenesis - Sperm & Egg formation; ultra structure of sperm and ovum, egg types, egg membrane. Fertilization, cleavage, Morula, Implantation, blastulation, gastrulation, formation of germ layers, axis formation - anterior and posterior. Sex determination - chromosomes and environment.

Unit III

Organogenesis - I: Organogenesis: central nervous system and the epidermis - formation of neural tube, differentiation of the neural tube, tissue architecture of the central nervous system, origin of cutaneous structures. Neural crest cells and axonal specificity - specification, Trunk neural crest, pattern generation in the nervous system.

Organogenesis - II: Plant meristem organization and differentiation - organization of shoot apical meristem (SAM); organization of root apical meristem (RAM); pollen germination and pollen tube guidance; phloem differentiation; self incompatibility and its genetic control; embryo and endosperm development; heterosis and apomixes.

Unit IV

Organogenesis - III: Paraxial and intermediate mesoderm - Somites formation, Osteogenesis, Urogenital system. Lateral plate mesoderm and endoderm - Heart formation, digestive tube and its derivatives.

Unit V

Implications of developmental biology: Medical implications of developmental biology - genetic disorders in human development, environmental assaults on human development, future therapies and developmental biology, environmental regulation of animal development - environment as a part of normal development, polyphenisms and plasticity, learning system.

Book

1. Gilbert S.F. 2010. Developmental Biology, (Ed: 9) Sinauer Associates Inc. Massachusetts.

References

1. Alberts B. et al. 2002. Molecular Biology of the Cell, (Ed: 3) Garland Science, NY.
2. Lodish, H. et al. 2000. Molecular Cell Biology (Ed: 4) W. H. Freeman, NY.

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Sem. II **Hours/Week: 5**
14PBC2108 **Credits: 5**

RECOMBINANT DNA TECHNOLOGY

Objectives

i) To study the various underlying principles of genetic engineering that forms the basis of rDNA technology.

ii) To study the methodologies, and in brief the applications and related issues of rDNA technology.

Unit I

Introduction to Recombinant DNA technology - isolation (mechanical, cDNA, shotgun) & purification of nucleic acid, PCR; enzymes in molecular biology (restriction endonuclease, ligases, reverse transcriptase, nucleases, polymerase, alkaline phosphatase, terminal transferase, and T4 polynucleotide kinase). Joining DNA molecules: E. coli DNA ligase, T4 DNA ligase, linkers, adaptors & homopolymers.

Unit II

Expression cassette - promoters (constitutive, inducible, tissue specific), terminators, reporters, markers (antibiotic resistant, herbicide resistant, antimetabolite), Vectors in gene cloning - Plasmids (pBR322, pUC), Bacteriophages (Phage l, M13), cosmids, phagemids, yeast plasmid vector, viral vectors, (adenovirus, adeno associated virus, baculovirus, herpes virus, retrovirus, cauliflower mosaic virus, tobacco mosaic virus, potato virus X), transposons (Ac-Ds, P) artificial chromosome (BAC, YAC, HAC), shuttle vector, Expression vector.

Unit III

Gene transfer methods - transformation - physical method (electroporation, micro-injection, particle bombardment, liposome-mediated transfer), chemical method (PEG mediated, DEAE Dextran mediated, CaPO4 mediated gene transfer), Biological method (Agrobacterium mediated gene transfer). Expression systems - prokaryotes (Bacteria) and eukaryotes (yeast, mammalian and, insect cell lines).

Unit IV

Screening and selection methods - insertional inactivation, blue-white selection, colony - in situ hybridization, in vitro selection, in vitro translation, radioactive antibody test, immunological techniques, DNA labelling, dot blot hybridization, Molecular beacons. Gene Silencing, RNA interference, antisense therapy, gene knockout. Blotting techniques - southern, northern, western and south-western.

Unit V

Molecular Techniques - RFLP, RAPD, AFLP, DNA Finger printing, DNA Foot printing, Microarray (DNA & Non-DNA). Libraries - Genomic library; C-DNA library & its types; BAC library; YAC library; Methyl filtration libraries; COT fractionation based libraries. Bioethics & Biosafety in genetic engineering; IPR & Patenting.

Books

1. Glick R. and J. J. Pasternak. 2002. Molecular Biotechnology (3rd Edition). ASM Press, Washington, USA.
2. Old R.W and S.B Primrose. 1989. Principles of gene manipulation (Ed:4). Blackwell Scientific Publications, London.

Reference

1. Brown T. A. 1988. Gene cloning - An introduction. VNR (UK) co. Ltd, England.
2. David M Glove. 1984. Gene cloning - The mechanisms of DNA manipulations. Chapman and hall, New York.
3. Ernst L Winnacker. 2002. From genes to clones - Introduction to gene technology. VCR Pub., Weinheim.
4. James D Watson. et al. 1992. Recombinant DNA. WH freeman and co., NY.
5. Maniatis T. and J. Sambrook et al. 2003. Molecular cloning - A laboratory manual. Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York.

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Sem. III **Hours/Week: 4**
14PBC3402 **Credits: 4**

IDC-2 (WS)

BIOPROCESS TECHNOLOGY

Objectives

i) To study the avenues of exploiting microbes in bioconversion technology.
ii) To study the downstream processing for product recovery in fermentation.

Unit I

Principles of fermentation process, Bioprocess Vs Chemical process, Media formulation - Growth factors, Buffers, O2, Antifoams and Media Optimization. Cell growth and quantitation - density, cell mass, growth pattern, yield factors and environmental conditions. Batch, Continuous and Fed batch cultures.

Unit II

Bioreactor design, parts and functions, sterilization, impellers, baffles and sparger. Types of reactor - submerged reactor, mechanically stirred draught-tube reactor, continuous flow stir type reactor, airlift reactor, jet loop reactor, surface reactor and packed bed reactor.

Unit III

Bioprocess control and monitoring variables: O2 requirement and uptake-factors affecting KLa-aeration, agitation, pressure and pH, medium rheology. Computers in bioprocess. Flow measurement and control, control system - manual and automatic PID control.

Unit IV

Bioconversion and biocatalysts: Immobilization of cells and enzymes - methods and advantages. Selection of industrially important microorganisms. Strain improvement preservation and properties of industrial strains. Production strategies for insulin, lactic acid and vinegar. Scale-up and scale-down - problems and solutions.

Unit V

Downstream processing: recovery of microbial cells and products - precipitation. Filtration and centrifugation. Cell disruption - physical and chemical methods. Extraction - liquid-liquid extraction and aqueous-two phase extraction. Chromatography. Membrane processes, drying and crystallization.

Books

1. Stanbury, P F & Whitaker, A, 1995, Principles of Fermentation Technology, Pergamon.
2. Schuler ML & Fikret Kargi, 2002, Bioprocess Engg: Basic Concepts, Prentice Hall, NJ.
3. Wulf Crueger & Anneliese Cruger, 2004, Biotechnology: A Textbook of Industrial Microbiology, 2nd Edn., Panima Publishing Co., India.

Reference

1. E. MT. El-Mansi & C F A Bryce, 2002, Fermentation Microbiology and Biotechnology, Taylor & Francis Co., USA.
2. Bailley & Ollis, 1986, Biochemical Engg Fundamentals, McGraw Hill, New York, USA.
3. Coulson, J M & Richardson, S F, 1984, Chemical Engg, Pergamon Press, USA.
4. Mooyoung (ed.), 1985, Comprehensive Biotechnology, Vol. I, II, III & IV, Pergamon Press, USA.

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Sem. IV **Hours/Week: 6**
14PBC4119 **Credits: 5**

ADVANCES IN CLINICAL RESEARCH

Objectives

i) To provide the students with requisite knowledge that will enable them to pursue a career in the clinical research industry.
ii) To ensure that India does not lag behind in maintaining the internationally prescribed standards of clinical ethics.

Unit I - Introduction to clinical research

Introduction to clinical research, terminologies and definition in clinical research, origin and history of clinical research, difference between clinical research and clinical practice, types of clinical research, phases of clinical research, clinical trials in India -the national perspective, post marketing surveillance, pharmaceutical industry - global and Indian perspective, clinical trial market, career in clinical research.

Unit II - Pharmacology and drug development

Introduction to pharmacology, concept of essential drugs, routes of drug administration, introduction to drug discovery and development, hurdles in drug development, sources of drugs, basics of drug, discovery & development, approaches to drug discovery, evolutionary classification of the strategies for drug discovery, emerging technologies in drug discovery, preclinical testing, investigational new drug application, clinical trials, new drug application and approval, pharmacokinetics, pharmacodynamics, recent advances - pharmacogenomics and protein based therapies.

Unit III - Ethical considerations and guidelines in clinical research

Historical guidelines in clinical research, Nuremberg code, declaration of Helsinki, Belmont report, international conference on harmonization (ICH)- brief history of ICH, structure of ICH, ICH harmonization process, guidelines for good clinical practice, glossary, the principles of ICH GCP, institutional review board / independent ethics committee, investigator, sponsor, clinical trial protocol and protocol amendment(s), investigator's brochure, essential documents for the conduct of a clinical trial.

Unit IV - Regulation in clinical research & management

Introduction of clinical trial regulation, European Medicine Agency, US FDA, drug and cosmetic act, Schedule Y, ICMR Guideline. Clinical Trial Management - project management, protocol in clinical research, informed consent, case report form, investigator's brochure (IB), selection of an investigator and site, clinical trial stakeholders, ethical and regulatory submissions, documentation in clinical trials, pharmacovigilance, training in clinical research, roles and responsibilities of clinical research professionals.

Unit V - Clinical data management

Introduction to CDM, CRF Design, clinical data entry, electronic data capture, data validation, discrepancy management, clinical data coding, SAE reconciliation, quality assurance & clinical data management, guideline & regulation in clinical trial data.

Books

1. Satoskar RS, Bhandarkar SD, Ainapure SS, 2003. Pharmacology and Pharmacotherapeutics. 18th ed. Mumbai: Popular Prakashan: 376.
2. Syme SL, 1986, Social determinants of health and disease. In: JM Last (ed) Maxcy- Rosenau Public Health and Preventive Medicine (12th Edition), Norwalk, Conn.:Appleton-Century-Crofts.
3. Bertram Katzung, Susan Masters, Anthony Trevor, 2012. Basic and Clinical Pharmacology 12/E, McGraw Hill publishers, USA.

Reference

1. K. D. Tripathi, 2008, Essentials of Medical Pharmacology, Jaypee Brothers Medical Publishers, India.
2. Narayanan, 2001, Intellectual Property Law, 3rd Ed., 10th Revised, Eastern Law House Private Ltd, India.
3. Bhushan Patwardhan, 2007, Drug Discovery and Development: Traditional Medicine and Ethnopharmacology, New India Publishing, India.
4. Robert B. Taylor, 2011, Medical Writing: A Guide for Clinicians, Educators, and Researchers, Amazon, USA.

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Sem. V **Hours/Week: 4**
14UBO530214 **Credits: 3**

ECOLOGY AND PHYTOGEOGRAPHY

Objectives

1. To enable the students to understand the fundamentals of ecology and phytogeography.
2. To study the structure, function and components of different types of ecosystems.

Unit I

Introduction to ecology. The biosphere, biomes and impact of climate on biomes. Biogeochemical cycles (carbon, nitrogen, phosphorous).

Autecology: Definition and different aspects of autecology. Ecological indicators - Role of indicators in environmental monitoring.

Unit II

Synecology: Definition, Classification units of vegetation, Community composition, Classification of community, Study of plant community structure. Plant Succession: Definition, Primary and Secondary succession, Autogenic and allogenic succession, Mechanism of plant succession, xerosere and hydrosere.

Unit III

Plant interactions: Symbiosis, mutualism, parasitism. Concept of species diversity: a, b, g. Sampling techniques in plant community studies - Quadrat and transect methods - species area curve - density, frequency, abundance, dominance of populations - importance value index - construction of phytographs.

Unit IV

Definition, concept, scope and significance of phytogeography. Centres of origin and distribution of species. Patterns of plant distribution - continuous distribution and discontinuous distribution, vicarism, migration and extinction.

Unit V

Continental drift - evidences and impact; glaciation; theory of land bridges. Endemic distribution, theories on endemism, age and area hypothesis. Phytogeographical zones of India.

Book

1. Sharma, P.D. (1995) Ecology and Environment. Rastogi Publications, Meerut

References

1. Odum, E.P. 1983. Basic Ecology, Saunders, Philadelphia.
2. Melchias G 2001 Biodiversity and Conservation. Science Publishers Inc., NH USA
3. Smith, R.L. 1996. Ecology and Field Biology, Harper Collins, New York.
4. Dash M C 1993. Fundamentals of Ecology. Tata McGraw Hill.
5. Begon, M. Harper, J.L. and Townsend, C.R. 1996. Ecology, Blackwell Sci, Cambridge
6. N.S. Subrahmanyam and A.V. S.S. Sambamurty. 2000. Ecology. Narosa,

Sem. I **Hours/Week: 6**
14PBO1101 **Credits: 5**

PLANT DIVERSITY - I
(Thallophytes and Bryophytes)

Objectives

1. To understand the major groups of cryptogramic plants and their characteristics.
2. To trace their interrelationships and study their evolutionary trends.

Unit I

Algae: Introduction and history of phycology. Algology in India (Contributions of eminent Indian algologists). Criteria used in algal classification (Fritsch & De Silva) - Life cycles and mass culture of algae - General characteristics, thallus variations, reproduction, distribution and economic importance of major groups of algae. Cyanophyta: *Oscillatoria, Nostoc* and *Scytonema.*

Unit II

Chlorophyta: *Chlamydomonas, Volvox, Chlorella, Pediastrum, Scenedesmus, Cladophora, Coleochaete, Ulva, Caulerpa, Oedogonium, Zygnema, Spirogyra.* Phaeophyta: *Ectocarpus, Sphacelaria, Dictyota, Padina, Sargassum.* Rhodophyta: *Porphyra, Batrachospermum, Gelidium, Gracillaria, Polysiphonia. Centric and Pinnate Diatoms, Vaucheria, Euglena.*

Unit III

Fungi - general features, occurrence and distribution; Classification of fungi (Ainsworth, 1973; Alexopoulos and Mims, 1983), recent trends in the classification of fungal cell ultrastructure; General characters of major classes: Mastigomycotina, Zygomycotina, Ascomycotina, Basidiomycotina and Deuteromycotina. Thallus organization; cell wall composition; ecology of fungi, mode of nutrition (saprobic, biotropic and symbiotic); reproduction (vegetative, asexual and sexual), Spore dispersal mechanisms.

Unit IV

Heterothallism; heterokaryosis; parasexuality; sex hormones in fungi; degeneration of sex. Economic importance of fungi. Fossil fungi. Phylogeny and interrelationship of Myxomycetes, Oomycetes, Ascomycetes, Basidiomycetes and Deuteromycetes.

Lichens: Classification of Lichens (Hale, 1969). Occurrence and interrelationship of phycobionts and mycobionts, structure and reproduction

in Ascolichens, Basiodiolichens and Deuterolichens. Lichens as indicators of Pollution. Economic importance of lichens.

Unit V

Bryophyta - classification, general and reproductive characters of major classes - distribution of bryophytes - comparative study of gametophytes and sporophytes of major classes. Hepaticopsida: *Marchantia, Targionia, Porella, Cyathodium*. Anthocerotopsida: *Anthoceros, Notothyllus*. Bryopsida: *Sphagnum, Polytrichum* and *Bryum*. Spore dispersal mechanisms and economic importance.

Books

1. Singh, Pande and Jain. 1998.A text book of Botany, Rastogi Publication, Meerut.
2. Venkataraman, *et al*., 1974, Algae-Form & Function. Today and Tomorrow, Pub. Co.
3. Prem Puri, 1973. Bryophytes - a broad perspective. Atma Ram & Sons, New Delhi.

Reference

1. Delevoryas, T., 1977, Plant Diversification. Holt, Rinehart & Wintson, New York.
2. Chapman, V.J. & Chapman,D.J. The Algae. ELBS & MacMillan, London
3. Srivastava, H.N., 1999, Fungi. Pradeep Publications, Jalandhar
4. Hale, Jr. M.E., 1983, Biology of Lichens. Edward Arnold, Mayland.
5. Alexopoulus, C. J. and Mims, C. W. (1979). Introductory Mycology. Wiley Eastern Ltd., NY
6. Bessey, E. A. 1979. Morphology and Taxonomy of Fungi. Vikas Pub, New Delhi.
7. Bold, H. C. 1980. Morphology of Plants and Fungi. Harper and Row Publishing Inc., NY
8. Burnet, J. H. 1971. The Fundamentals of Mycology. ELBS Publications, London.
9. Mehrotra, R. S and Aneja, K. R. 1990. An Introduction of Mycology. Wiley Eastern, New Delhi.
10. Vashishta, B. R. and Sinha, A. K. (2007). Botany for Degree Students - Fungi. S. Chand, New Delhi.
11. Cavers F. 1911. The interrelationship of Bryophytes. New Phytologist.

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Sem. I **Hours/Week: 4**
14PBO1102 **Credits: 3**

Laboratory Course-I

PLANT DIVERSITY-I (Thallophytes and Bryophytes)

Algae

Ulva, Caulerpa, Padina, Sargassum, Batrachospermum, Gracilaria, Nostoc and *Oscillatoria*.

Fungi

Plasmodiophora, Rhizopus, Pilobolus, Xylaria, Phyllochora, Aspergillus, Penicillium, Agaricus and *Fusarium.*

Lichen

Usnea.

Bryophytes

Reboulia, Anthoceros, Pogonatum and *Polytrichum*

Field Trip and Report submission.

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Sem. I **Hours/Week: 6**
14PBO1103 **Credits: 5**

PLANT DIVERSITY-II
(Pteridophytes, Gymnosperms and Palaeobotany)

Objectives

1. To understand the major groups of lower vascular plants and their characteristics.
2. To trace their interrelationships and study their evolutionary trends.

Unit I

Peridophytes- General Topics. General characters - Reimer's classification (1954), Different theories of origin, life cycle, Telome concept. Sporangium development - eusporangiate type and leptosporangiate type. Range of structure, reproduction and evolution of the gametophytes- sex organs. Apogamy and Apospory. Detailed account on stelar and soral evolution. Heterospory and seed habit.

Unit II

Diversity in pteridophytes - morphology, anatomy, reproduction and evolution of the gametophytes and sporophytes of the following genera *Psilotum, Lycopodium, Selaginella, Equisetum, Alsophila* and *Marsilea.*

Unit III

Gymnosperms - general characters. Classification of gymnosperms (Sporne, 1965). Phylogeny and economic importance of gymnosperms. Comparative study of Cycadopsida, Coniferopsida, and Gnetopsida. Salient features of Pteridospermales, Bennettitales, Pentaxylales, Cycadales, Cordaitales, Coniferales and Gnetales.

Unit IV

A general account of distribution, morphology, anatomy, reproduction and life cycle of the following genera: Cycadopsida- *Cycas*, Coniferopsida- *Cupressus*- Gnetopsida- *Gnetum.*

Unit V

Palaeobotany - Geological time scale, fossilization and types of fossil. Carbon dating. Detailed study of the fossil forms - Pteridohytes: *Rhynia, Lepidodendron* and *Calamites.* Gymnosperms: *Lyginopteris, Williamsonia, Cordaites.*

Books

1. Vasista PC, Sinha AK and Anilkimar. 2005. Botany for degree students, Gymnosperms, S Chand, New Delhi.
2. Pandey BP. 1998. A Text Book of Botany Vol. II. S Chand, New Delhi.

Reference

1. Pandey, S.N., S.P. Misra and P.S. Trivedi. 2002. A Textbook of Botany Volume II. Vikas Publishing House Pvt Ltd, New Delhi.
2. Rashid.A. 2007. An Introduction to Pteridophyta - Vikas publications, New Delhi.
3. Johri, RM, Lata S, Tyagi K (2005), A text book of Gymnosperms, Dominate Pub and Distributor, New Delhi
4. Sporne, K.R. (1975). The Morphology of Pteridophytes, Hutchinson and Co., London.
5. Sporne, K.R. (1967). The morphology of gymnosperms, Hutchinson and Co., London.

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Sem. I **Hours/Week: 6**

14PBO1104 **Credits: 5**

PLANT ANATOMY, EMBRYOLOGY AND MORPHOGENESIS

Objectives

1. To understand the basic principles of differentiation of cell types.
2. To know the process of growth and development through totipotency.

Unit I

Cambium: Development of cambium in root and stem. Cell type in vascular cambium. Infected vascular cambia, seasonal activity in cambium, cambium in wound healing and grafting. Vascular cambium and periderm formation in monocot and wound periderm.

Unit II

Anomalous Secondary Growth: Concepts-Modification of the common type of vascular cambium-Unique activity of the vascular cambium. Discontinuous, unidirectional and bidirectional activity of cambium. Anomalous secondary growth in Beet root and sweet potato.

Unit III

Male gametophyte: Structure and development, microsporogenesis, male gametophyte development. Pollen morphology, exine sculpturing, pollen kit, NPC formula. Viability of pollen grains. Pollination, pollen germination, growth and nutrition of pollen tube.

Female gametophyte: Ovule: Structure, ontogeny and types. Megasporogenesis. Embryosac - development, types, ultrastructure and nutrition of embryosac. Female gametophyte development.

Unit IV

Fertilization: Double fertilization; embryo development - different types. Endosperm development, types of endosperm, haustorial behavior of endosperm. Xenia and metaxenia.

Polyembryony - types and causes. Seed formation, dormancy and germination. Apomixis, Parthenogenesis.

Unit V

Morphogenesis and organogenesis in plants: Organization of shoot and root apical meristems; shoot and root development, leaf development and phyllotaxy; transition of flowering, floral meristems and floral development.

Books

1. Fahn.A. (1989) Plant Anatomy. Maxwell, Macmillan, Singapore.
2. Bhojwani, S.S., (1981) Embryology, of Angiosperms, Vikar & Bhatnagar, New Delhi

Reference

1. Clowes, F.A.L., (1961) Apical Meristems. Blackwell Scientific, Oxford.
2. Cutter, E.G., (1978) Plant Anatomy. Edward Arnold Ltd., London.
3. Esau, K., (1953) Plant Anatomy. Jon Willey & Sons Inc, New York.
4. Maheshwari, P.,(1988) An Introduction to the Embryology of Angiosperms, McGraw-Hill.
5. Raghavan, V., (1976) Experimental Embryogenesis in Vascular Plant, Academic press.

Sem. I **Hours/Week: 4**
14PBO1105 **Credits: 3**

Laboratory Course-II
(Pteridophytes, Gymnosperms, Palaeobotany, Anatomy, Embryology and Morphogenesis)

Pteridophytes

Psilotum, Lycopodium, Selaginella, Equisetum, Alsophila and *Marsilea.*

Gymnosperms

Cycas, Cupressus and *Gnetum.*

Palaeobotany

Rhynia, Lepidodendron, Calamites, Lyginopteris, Williamsonia and *Cordaites.*

Plant Anatomy and Embryology

- Study of cambia - non storied and storied.
- Study the anomalous primary and secondary features in *Aristolochia, Bignonia, Boerhaavia, Nyctanthes* and *Dracaena.*
- Study of stomata, trichomes, and laticifers.
- Examine of shoot apices in *Hydrilla* and *Philodendron.*
- Examine of root apical meristem in *Philodendron.*
- Study of leaf anatomy - structure, stomata, trichomes, types of stomata.
- Study of pollen morphotypes (at least 6 examples: Malvaceae, Asteraceae, Convolvulaceae, Labiatae and Graminae.)

- Isolation of zygotic globular, heart-shaped, torpedo stage and mature embryos from suitable seeds and polyembryony in citrus, jamun (*Syzygium cumini*) etc. by dissections.
- Tests for pollen viability using stains and in vitro germination. Pollen germination using hanging drop and sitting drop cultures, suspension culture and surface culture.

Sem. II **Hours/Week: 5**
14PBO2108 **Credits: 4**

ECOLOGY AND PHYTOGEOGRAPHY

Objectives

1. To understand the basic concepts of ecosystem and biodiversity.
2. To study the principle of sustainable utilization and management of bioresources.

Unit I

Introduction to ecology, evolutionary ecology, environmental concepts - laws and limiting factors, ecological models. Characteristics of population: population size and exponential growth, limits of population growth, population dynamics, life history pattern, fertility rate and age structure, population growth. Competition and coexistence, intra-species interactions, inter- species interactions, scramble and contest competition model, mutualism and commensalism. Modes of speciation and reproductive isolating mechanisms. Community structure and community dynamics.

Unit II

Nature of ecosystem structure - abiotic and biotic components. Mineral cycling (C, N, P). Classification of ecosystems and their characteristics. Ecosystem dynamics - productivity, laws of thermodynamics, food chain and food webs, energy flow and the trophic levels and ecological pyramids. Ecological succession in water, grassland and desert ecosystems; pioneer and climax communities. Resilience of ecosystem and ecosystem management. The biosphere, biomes and impact of climate on biomes.

Unit III

Atmospheric ozone depletion, acid rains, global warming, global climate changes and their consequences on food crops and biodiversity. Climate change conferences - UNFCCC and IPCC. Coping with environmental variations and the mechanisms of evolution - genetic drift, gene flow, mutation and natural selection. Species richness - number of species in a community; and evenness - distribution of individuals among species.

Unit IV

Biodiversity - the types and their measurements; and species diversity and its importance. Phytogeography: Climate, atmosphere and the geological time scale; geographical history, continental drift, land bridges, shifting of

poles and plates. Megacentres of origin of crop diversity; phytogeographic regions of the world, and their characteristics with emphasis on vegetation. Phytogeography of the Western Ghats.

Unit V

Concepts of phytogeography: endemism, hotspots, plant explorations, endemism in Western Ghats, invasions and introductions, local plant diversity and its socio-economic importance. *Conservation Biology:* Biodiversity, its importance, assessment, loss and conservation. India's biodiversity. World organisations for conservation of biodiversity, Red List categories of IUCN. Principles and approaches to conservation.

Book

1. Sharma P.D, 2009. Ecology and Environement, Rastogi Publications, Meerut.

Reference

1. Odum, E.P., 1970. Fundamentals of Ecology, 3rd edn, W.B. Saunders Ltd., UK.
2. Melchias G 2001 Biodiversity and Conservation. Science Publishers Inc, NH USA.
3. Krishnamurthy K.V. 2003. An advanced text book on Biodiversity Principle and Practice. Oxford and IBH Publishing Co., New Delhi.

Sem. III **Hours/Week: 3**
14UBO330208 **Credits: 2**

PLANT BREEDING AND EVOLUTION

Objectives

i) To study the progress made in the field of plant breeding.
ii) To understand the principles, techniques and applications of plant breeding.

Unit I

Plant Breeding: Historical aspect of plant breeding and genetic basis. Objectives of plant breeding - Modes of reproduction in relation to breeding methods, sexual, asexual and apomitic reproduction - Floral Biology in relation to selfing and crossing techniques. Breeding Methods: Plant introduction - Types and procedures - Centres of diversity and origin of cultivated plants.

Unit II

Hybridization: Objectives - Choice of parents - problems and causes of failure of hybridization - incompatibility and sterility. Methods of handling genetic consequence of hybridization - method of handling segregation material for isolation of superior strains - Bulk method and pedigree method of selection - Role of interspecific and intergeneric hybridization in plant improvement.

Unit III

In breeding depression and heterosis: Genetic basis and application in plant breeding. Steps in the production of single cross, double cross, three way cross and synthetics - induced polyploidy in plant breeding; role of auto and allopolyploidy - Heteroploids - Mutagen and crop improvement. Population genetics: Hardy-Weinberg principle; gene frequencies; and the factors that change it.

Unit IV

Back Crossing: Theory and procedure for transferring various types of character. Preservation and utilization of germplasm. Breeding of rice, sugarcane, groundnut and maize. Breeding for disease resistance and drought tolerance.

Unit V

Evolution: Origin of life, theories of evolution of life forms: Lamarkism, Darwinism and Speciation. Variations - Definition, causes and types, Mutations (Principles of Hugo de'veries), Role of mutations in speciation. Evidences for evolution, adaptive radiation, biological evolution.

Book

1. Chaudhari, H.K., (1995) Revised Ed., Elementary Principles of Plant Breeding.

Reference

1. Chandrasekaran & Parthasarathy, (1990). Cytogenetics and Plant Breeding.
2. Sinha,U. and Sinha, S., (1992). Cytogenetics, Plant Breeding and Evolution.
3. J.R. Sharma (1996) Principles and Practice of Plant Breeding.

Sem. IV **Hours/Week: 5**
14UBO430211 **Credits: 3**

CELL BIOLOGY AND GENETICS

Objectives

i) To understand the principle, hereditary mechanism, structure and functions of genetic materials.
ii) To study the cellular organization and function of different cell organelles.

Unit I

Cell cycle and its regulation; organisation of cytoskeleton and microtubules; cellular mechanisms in development and differentiation. Structure, organization and functions of nucleus, mitochondria, chloroplasts, ER, ribosomes, golgi complex, lysosome and vacuole.

Unit II

Cytoplasmic membrane - structure and functions. Structure of DNA and RNA. Nucleosides and nucleotides. Primary, secondary and tertiary structures. Chromatin nucleosomes and chromosomal proteins, protamines and histones. Special chromosome types - polytene & lamp brush.

Unit III

Mendel's laws of heredity and chromosome basis of heredity. Modified Mendelian ratios. Multiple alleles, linkage and crossing over; Sex linked inheritance, sex determination mechanism. Cytoplasmic inheritance and plastid inheritance.

Unit IV

DNA as the genetic material - proof: Griffith's, Avery et al., and Hershy and Chase. RNA as genetic material. Population genetics: gene frequency, gene pool, Hardy-Weinberg equilibrium. Gene frequencies - conservation and changes. Decline of human gene pool and eugenics.

Unit V

Basic knowledge and applications of genomics and proteomics. Genomics: plant, animal and structural and functional genomics, the Arabidopsis genome, rice genome, and the human genome. Objectives of human genome project and the controversies.

Book

1. Verma, P.S. and V.K. Agarwal, 2003, Genetics. S. Chand, New Delhi.

Reference

1. Freifelder, D.1987. Essentials of Molecular Biology, Jones & Bartlett, Boston.
2. Gardner, EJ., Simmons, MJ. & Snustad, D. 1991. Principles of Genetics, John Wiley & Sons Inc., New York.
3. Sinnott, EW., Dunn, LL. & Dobzhansky, T. 1997. Principles of Genetics, Tata McGraw Hill, New Delhi.

Sem. V **Hours/Week: 4**
14UBO530302A **Credits: 4**

MEDICINAL BOTANY

Objectives

1. To understand the different Indian system of medicines.
2. To study the ethnobotanical importance of various medicinal plants.

Unit I

History of Medicinal plants. Traditional Medicinal systems: Ayurvedha, Siddha, Unani and Naturopathy. Definition of Drug. Classification of natural drugs, (Alphabetical, Morphological, Taxonomical, Chemical and Pharmacological).

Unit II

Ethnobotany - definition. Major tribes of South India and their ethnobotanical and ethnobiological heritage. Ethnomedicines. Ethnobotany and conservation of plants with special reference to India - Mythology and conservation of ecosystems, conservation of selected plant species: sacred groves, ethnobotanical field methods.

Unit III

Cultivation, collection and preparation of natural drugs, macroscopic (physical and organoleptic characters), therapeutic and pharmaceutical characterization of the following medicinal plants: Adathoda vasica, Aloe vera, Centella asiatica, Piper nigrum, Allium sativum, Curcuma longa, Ocimum sanctum and Vinca rosea.

Unit IV

Drugs from leaves (Eucalyptus), flower (Eugenia), fruits and seeds (Coriander), roots (Withania), underground stem (Ginger), bark (Cinchona) and wood (Ephedra). Cultivation and utilization of selected medicinal plants. Bacopa monnieri, Cassia senna, Gloriosa superba, Phyllanthus amarus and Rauvolfia serpentina.

Unit V

Drug adulteration, Drug evaluation: Chemical and Biological. Phytochemical investigations. Quality control of herbal drugs. Role of NMPB, AYUSH and CDRI.

Books

1. Gokhale, S.B., Kokate, C.K. and Purohit, A.P. (2003). Pharmacognosy. NiraliPrakashan, Pune.
2. Arumugam, K.R. and Murugesh, N. (1990). Text book of pharmacognosy. Sathya Publishers, Chinnalapatti (Tamilnadu) 624 201.

Reference

1. Amruth, (1996) The Medicinal plants Magazine (All volumes) Medplant Conservatory Society, Bangalore.
2. Bhattacharjee, S.K. 2004. Hand Book of Medicinal plants. Pointer Publishers, Jaipur.
3. Handa, S. S. and V. K. Kapoor, (1993). Pharmacognosy. Vallabh Prakashan, New Delhi.
4. Harbourne, J. B. (1998). Phytochemical methods: A Guide to Modern Techniques of Plant Analysis (3rd edition). Chapman and Hill Co., New York.
5. Jain, (2001). Medicinal plants. National Book Trust, New Delhi.
6. John Jothi Prakash, E. (2003). Medicinal Botany and Pharmacognosy. JPR Publication, Vallioor, Tirunelveli.
7. Joshi, S.G. (2001). Medicinal plants. Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi.
8. Prajapathi, Purohit, Sharma and Kumar. (2003). A Hand book of Medicinal plants. Agrobios Publications, Jodhpur.
9. Purohit and Vyas, (2004). Medicinal Plants Cultivation. Agrobios Publications, Jodhpur.

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Sem. VI **Hours/Week: 4**
14UBO630303A **Credits: 4**

Core Elective:
BIOINSTRUMENTATION

Objectives

1. To initiate the students into research activities.
2. To learn to handle various instruments, their principles and procedures.

Unit I

Microscopy: - Simple, Compound, Phase contrast, Fluorescence, Electron (SEM and TEM) microscopy, Micrometry. Buffers: Characteristics and preparation; pH meter - principle, measurement of pH and pKa. Electrometric determination - glass and reference electrodes.

Unit II

Centrifugation: - Principles, types and operation; Rotors, Bench top, Low speed, High speed, Cooling and Ultracentrifuge. Gas-measuring electrodes-basic principles, activity and concentration of Clarke electrode.

Unit III

Chromatography:- principles and applications of Paper, TLC, HPTLC, HPLC, Ion exchange, molecular sieve and affinity chromatography. Electrophoresis - basic principles- gel electrophoresis, its types, electrophoretic mobility and factors. Isoelectric focusing, application, SDS-PAGE and AGE.

Unit IV

Colorimeter: - principles and instrumentation. Spectrophotometry :- principles, instrumentation and types UV/Vis, Flame photometer - general principles and instrumentation. Atomic absorption spectrophotometer, NMR and ESR.

Unit -V

Tracer techniques: nature of radioactivity, patterns of decay, half life - detection of radiation and measurements - GM Counter Scintillation Counter, autoradiography, X-ray crystallography and applications of isotopes.

Books

1. Kothari, C.R. 2000. Research Methodology - Methods & Techniques. Wishwa Prakashan
2. Misra, R.P, 2000 Research Methodology - a handbook, Concept Publising Company, New Delhi.

Reference

1. Hawkins, C and Sorgi, M. 2000 Research, Narosa Publishing House, New Delhi.
2. Willard, H.D. et al., 1965, Instrumental Methods of Analysis, D Van Nostrand, New York.
3. Wilson, E. & Goulding, K.H. 2000 A Biologists' Guide to Principles and Techniques of Practical Biochemistry ELBS.

Sem. VI **Hours/Week: 4**
14UBO630303B **Credits: 4**

Core Elective:
SEED TECHNOLOGY

Objectives

1. To have a thorough knowledge of the seed structure and different types of seeds.
2. To improve the knowledge of students about storing seeds, seed testing etc.

Unit I

History of seed testing and its importance to agriculture, International Seed Testing Association (I.S.T.A.) - rules, prescriptions and recommendations. Sampling of seeds, purity analysis (physical and genetical), seed moisture content, germination test, rapid test of viability, seedling evaluation and various method of seed separation, cleaning and drying.

Unit II

Gross architecture of seed structure of angiosperms, identification and structure of seeds of important crop plants and their weeds (with special reference to Tamil Nadu). Principles of seed production, seed production in self and cross pollinated plants; hybrid seed production.

Unit III

Physiology and biochemistry of seed germination; seed and seedling vigour. Seed dormancy and longevity. Seed storage methods, principles for safe seed storage, effects of storage, mycotoxins, Deterioration of seeds in storage by micro-organisms, insects and rodents; control of seed deteriotation.

Unit IV

Seed certification standards and quarantine regulations. International cooperations, International Seed Testing, Association - Certificates, other seed certificates; Indian Seed Act and National and Regional Seed Corporation of India - their organisation, aims and functions. Practical work will be based on the theory syllabus.

Unit V

Introduction and importance of seed pathology in modern agriculture. History of seed pathology. Seed-borne inoculum. Kinds and various method for testing seed borne fungi, bacteria and viruses. Avenues of seed infection,

environment influencing seed infection, infected/contaminated part of seed, morphology and anatomy of seeds in relation to invasion and location of inoculum of the pathogen in seed.

Books

1. Baskin, CC and Baskin, JM (2001). Seeds: Ecology, Biogeography and Evolution of Dormancy and Germination, Academic Press, San Diego.
2. Bedell, PE. (1998) Seed Science and Technology: Indian Forestry Species.Allied Publishers Limited, New Delhi.
3. Bewley, JD and Black M (1994) Seeds: Physiology of Development and Germination. 2nd edn. Plenum Press, New York.
4. Mayer, AM and Poljakoff-Mayber, A (1989) The Germination of Seeds 4th edn. Pergamon Press, England.

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Sem. VI **Hours/Week: 4**
14UBO630304A **Credits: 4**

BIOLOGICAL TECHNIQUES

Objectives

1. To understand the various techniques in Biology
2. To develop the skills and apply them in higher studies

Unit I

Principle and application of Microscope - Light and Electron microscopes, camera lucida, micrometry, Haemocytometer, pH meter, Calorimeter, spectrophotometer and chromatography (Paper, column and thin layer).

Unit II

Microtechniques - selection of material, fixation, acid and basic. Dehydration process, infiltration of wax, embedding, sectioning, mounting, preparation of permanent slide, leaf clearing, smear and squash techniques.

Unit III

Stains: Classification- single, double, triple staining. Nuclear, cytoplasmic, cell wall stains and their rationale. Herbarium - collection, drying, pasting of plant specimen, protection of Herbarium- importance.

Unit IV

Techniques of the preparation of vertebrate skeletons and transparency preparations (Alizarian Red) Cartilage staining Museum Techniques: Dry and Wet preparation, Taxidermy Arthropod squash, Blood grouping ABO and Rh, Blood smear preparation, WIDAL, VDRL and RF tests.

Unit V

Earthworm and its characters, Preparatory methods of vermiculture, culture techniques, Economic and ecological importance of vermiform manure. Animal rearing : Rearing of Albino Rats, Rabbits, Fruit fly (Drosophila melanogastor).

Books

1. Verma, P.S and Agarwal, Concept of Cell Biology, (New Delhi: S. Chand & Co., 1999).
2. Chamberlain, C.J., Methods in Plant Histology(Jaipur: Arihant Publishers, 1990).
3. Jayaraman, J., Techniques in biology, (Chennai: Higginbothoms Ltd., 1972).
4. Mahoney, R., Lab Techniques in Zoology, (UK: Butterworth, 1966).
5. Vasantaraj David, S. and kumaraswamy. T., Elements of Economic Entomology, (Chennai: Popular Book Depo, 1998).

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Sem. III **Hours/Week: 4**
14PBT3403 **Credits: 4**

IDC-3 (BS):

FOOD TECHNOLOGY

Objectives

i) To understand the chemical nature and associated microbes of food.
ii) To understand the principles of food processing, preservation and manufacture.

Unit I

Food chemistry: constituent of food - contribution to texture, flavour and organoleptic properties of food; food additives - intentional and non-intentional and their functions; enzymes in food processing.

Unit II

Food Microbiology: sources and activity of microorganisms associated with food; food fermentation; food chemicals; food borne diseases - infections and intoxications, food spoilage - causes.

Unit III

Food processing: raw material characteristics; cleaning, sorting and grading of foods; physical conversion operations - mixing, emulsification, extraction, filtration, centrifugation, membrane separation, crystallization, heat processing.

Unit IV

Food preservation: use of high temperatures - sterilization, pasteurization, blanching, canning - concept, procedure & application; Low temperature storage - freezing curve characteristics. Factors affecting quality of frozen foods; irradiation preservation of foods.

Unit V

Manufacture of food products: bread and baked goods, dairy products - milk processing, cheese, butter, ice-cream, vegetable and fruit products; edible oils and fats; meat, poultry and fish products; confectionery, beverages.

Books

1. Crosby,N.T. 1981. Food packaging Materials Applied Science Publishers, London.
2. David, S. Robinson. 1997. Food Chemistry and nutritive value. Longman group, UK.
3. Frazier, W.C. and Westhoff, D.C. 1988. Food Microbiology, 4th ed. McGram-Hill, New York.
4. Pyke, M. 1981. Food Science and Technology, 4th ed., John Murray, London.
5. Sivasankar, B. 2002. Food processing and preservation, Prentice Hall, New Delhi.

References

1. Brenner, J.G., Butters, J.R., Cowell, N.D. and Lilly, A.E.V. 1979. Food engineering operations, 2nd ed., Applied Sciences Pub. Ltd., London.
2. Desrosier, N.W. 1996. The Technology of Food Preservation, CBS Publishers and Distributors, New Delhi.
3. Fennema, O.R. 1976. Principles of food science: Part I, Food chemistry, Marcel Dekker, New York.
4. Lindsay, W. 1988. Biotechnology, Challenges for the flavor and food Industries, Elsevier Applied Science.
5. Shakuntala, N. and Shadaksharaswamy, M. 1997. Foods; Facts and principles, (Ed: 2), New Age International Publishers, New Delhi.

Sem. V **Hours/Week: 4**
14UBU530301A **Credits: 4**

Core Elective-I:
PUBLIC RELATIONS MANAGEMENT

Objectives

- To Understand the role of public relations in building and maintaining a healthy corporate image.
- To understand the role of public relations between an organization and its publics.

UNIT-I: INTRODUCTION TO PUBLIC RELATIONS (8 Hrs)

Introduction to P.R.- Definition, Nature, History, and Development, Role of PR, PR associations. Multicultural and international public relations.

UNIT-II: PUBLIC OPINION (8 Hrs)

Public Opinion - The Psychological factors that affect the perception of the public, their through process and decision making process.

UNIT-III: PUBLIC RELATION PROCESS (8 Hrs)

Internal Relations and Employee Communication - Public Opinion Public Relations: The process

UNIT-IV: MEDIA AND TOOLS (8 Hrs)

Media & Tools: Press Radio, Television, Documentaries, Films. Company Literature: Annual reports, manuals Brochures Information, Bulletins, House Journals, News, Direct mailing. External Media and Media Relations.

UNIT-V: PROMOTIONAL TECHNIQUES (8 Hrs)

Advertising and Promotional Techniques: Promoting and positioning your organization through, Advertising, Exhibitions, open house, Tournaments etc., Lobbying, Managing Rumors & Leaks.

Text Books

1. Effective public relations and media strategy by C.V. Narasimha Reddy; PHI learning India PVT Ltd., Email : phi@phindia.com, 2009.

References:

1. Public Relations principles and practices with solution manual by lqbal S.2010
2. Sach deva Oxford University Press, Chennai.2010
3. Public relations practices by Allen H.Center and Partick Jackson - cage studies and problems - India Edition - PHI learning India PVT Ltd.2010
4. Public Management - maximize efficiency and effectiveness by Sukumar Chatterjee, Giobal India Publications, New Delhi. 2009.

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Sem. V **Hours/Week: 4**
14UBU530302A **Credits: 4**

Core Elective-II:
ENTREPRENEURIAL SKILLS DEVELOPMENT

Objectives

- To enable the students in the entrepreneurial skills Development.
- *To motivate the students to become an entrepreneur.*

UNIT-I: CONCEPTUAL FRAME WORK (8 Hours)

Entrepreneur - Entrepreneurship -Entrepreneur ship versus Management - Entrepreneur Vs Intarpreneur - Role of Entrepreneurship in Economic Development - Functions of entrepreneur in relation to new venture creation - women entrepreneur in India.

UNIT-II: ENTREPRENEURIAL DEVELOPMENT PROGRAME (8 Hours)

Development and training of entrepreneurs - Entrepreneurial Development Programme (EDP) - Role of Government in organizing EDPS Cultural and Social environment in promoting entrepreneurship - Entrepreneurial competencies - entrepreneurial motivation - performance and rewords.

UNIT-III: INSTITUTIONS ASSISTING ENTREPRENEURS (8 Hours)

Institutional service to entrepreneurs - DIC, SIDCO, NSIC, MSMEDI - SSIC, SIDCO - ITCOT, IIC - KVIC. Institutional finance to entrepreneurs: IFCI - SFC, IDBI, ICICI, TIIC, LIC and GIC, UTI, SIPCOT - SIDBI commercial Bank venture capital (Students are advised to visit the institution and know about the schemes available).

UNIT-IV: INNOVATION AND BUSINESS IDEA (8 Hours)

Opportunity Scouting and Idea generation - Role of creativity & innovation and business research - sources of business ideas - Entrepreneurial opportunities in contemporary business environment- Feasibility of the business idea & preparation of business plan- marketing feasibility - Marketing methods

Action Plan:1 Preparation of dummy Business Plan 2.Develop dummy product launching 3. Role play an entrepreneur 4. To visit various Business Enterprise 5.Conduct Trade Exhibition.

UNIT-V: COMPREHENSIVE BUSINESS PLAN (8 Hours)

Entrepreneurial since in India - Successful entrepreneurs - Identification of potential entrepreneurs - Prepare a report on experiential learning of successful / unsuccessful entrepreneur

Action Plan:

1. Students may be advised to develop a structured instrument questionnaire for conducting survey of the various aspects of entrepreneurs / enterprise.
2. Prepare a comprehensive Business plan / project report
3. Practiccal approach for self employment
4. Self help group Exhibition

Text Book:

1. Dr. C.B Gupta & Dr. N.P Srinivasan;Entrepreneurial Development; Himalya Publishing House; New Delhi.

References

1. Dr. Vasant DesaiDynamics ; Entrepreneurial Developmen; Himalya Publishing House; New Delhi.
2. Entrepreneurial Development; E.Gordon & K.Natarajan.-Himalya Publishing House; Chennai-2012.

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Sem. VI **Hours/Week: 4**
14UBU630303 **Credits: 4**

Core Elective-III
MODERN MANAGEMENT CONCEPTS & PRACTICES

Objectives

1. To provide the students for fundamental knowledge and exposure to the concepts, theories and practices in the field of management.
2. To motivate the students to become a manager in future

UNIT-I: CONCEPTS OF MANAGEMENT (8 Hours)

Management - Definition - Nature - Scope and Functions - Evolution of management thought - Contributions of FW Taylor, Henri Fayal, Elton mayo and Peter F. Drucker - Approaches to the study of Management - Relevance of management to different types of organization.

UNIT-II: PLANNING AND DECISION MAKING (8 Hours)

Nature, importance and planning process - Planning premises - Components of planning as Vision, Mission, Objectives, Goals, Polices, Strategies, Procedures, Methods, Rules, Projects and Budgets Decision Making - Meaning - Types - Decision Making process under Conditions of Certainty and Uncertainty.

Action Plan: (You are going to start a own organization, plan your vision, mission, objectives, goal and strategies which you are going to follow).

UNIT-III: ORGANIZING (8 Hours)

Nature, purpose and kinds of organizing - Structure - Principles and theories of organization- Departmentalization - Span of Control - Line and staff functions - Authority and responsibility - Centralization and decentralization - Delegation of authority - Committees - Informal organization.

Action Plan: (Change the organization structure for our college- which type of structure will be suitable).

UNIT-IV: STAFFING AND DIRECTING (8 Hours)

General principles of Staffing - Importance and techniques of Directing - Motivation, Meaning - Importance - Theories: Maslow, Herzberg, McGregor(X & Y). Communication: Meaning - Types - Process - Barriers; Leadership: Significance, Types Styles and Theories -Trait Contingency, Situation, Path-Goal And Tactical, Transactional and Transformational Leadership - Leadership Grid.

Action Plan: (Develop a staffing process for a new textile shop with leadership grid).

UNIT-V: COORDINATION AND CONTROLLING (8 Hours)

Coordination: Concept, Need and technique; Controlling: Objectives and Process of control - Devices of control - Integrated control - Special control techniques - Contemporary Perspectives in Management: Strategic alliance - Core competence - Business process reengineering - Total quality management - Six Sigma - Bench marking - Balanced Score - Card.

Action Plan: (Develop a Business Process Reengineering model for Seeking)

Text Books

1. Ricky W Griffin, Management , South-Western College Publication, 2010.
2. Stephen P. Robbins and Mary Coulter, Management 9th Edition, 2006.

References

1. Peter F. Drucker, Management,2008
2. Gareth Jones and Jennifer George, Contemporary Management, Tata McGraw- Hill/Irwin,2010.
3. Gene Burton and Manab Thakur, Management Today: Principles and Practice, TMH, 2009.
4. Weihrich and Koontz, Management: A Global perspective, McGraw Hill, 1988
5. Kaplan and Norton, The strategy - Focused Organisation: How Balanced Scorecard Companies Thrive in the New Business Environment, HBP, 2009.

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Sem. VI **Hours/Week: 2**
14UBU640602 **Credits: 2**

Skill Based Elective-II

PRACTICAL STOCK TRADING

Objectives

1. To know the basic ideas and to impart the practical knowledge of Stock Trading.
2. To Know the Practical stock trading

UNIT I : THE PRIMARY & SECONDARY MARKET (5 Hours)

Functions of New Issue Market - Methods of Floating of New Issues - Operators in the New Issue Market - Listing of Securities. Secondary Market- National Stock Market System - Over the Counter Markets - SHCIL - Depository System - Stock Exchange - Derivatives (Practical Work)

UNIT-II: TRADING MECHANISM OF STOCK EXCHANGE (4 Hours)

Classification of Stock Markets - Listed Shares - Procedure for Buying and Selling Shares - Steps in Buying and Selling - Types of Delivery - Transfer of Securities - Stock Market Reporting - Stock Market Index - Insider Trading.

UNIT-III: OPTIONS & FUTURE (4 Hours)

Option - Meaning - Types - Option Trading - Margins Valuation of options - Valuation of put option -Index option - Option Markets.

Hedgers and speculators - Future contracts - Future Markets - Clearing house - Margins future positions - Spot prices- Forward prices Vs Future Prices- Future Vs Options.

UNIT-IV: ACTION PLAN (Practical Work) (8 Hours)

Practical Learning in the field of Capital and Money Market, Day-to-day Practices of Stock Market, Model Demo of Share Trading, Online Trading

Text Book

1. M. Y.Khan, “Indian Financial System”, Tata Mc-Graw Hill.
2. Clifford Gomez, “Financial Markets, Institutions and Financial Services”, PHI Learning Private Limited, New Delhi-2009.
3. V.K Bhalla, Investment & Securities markets in India, Himalaya Publishing House, New Delhi.

References

1. R.P.Rustagi, “Financial Analysis and Financial Management”.
2. L.C. Gupta, “Export Study of Tracking in Shares and Stock exchange”.
3. Report on Currency and Finance - RBI.
4. P.N.Varshney, D.K.Mittal , “Indian Financial System”, Sulthan Chand & Sons
5. H.R.Machiraju, “Indian Financial Sysem”, Vikas Publishing House.
6. Http://virtualstocks.icicidirect.com / Gamesite/ customer/ login.aspx.

Sem. I **Hours/Week: 4**
14PCC1201B **Credits: 4**

Core Elective-1:

CYBER LAWS AND SYSTEM SECURITY

Objectives

- To create awareness on the different types of cyber crime.
- To educate the students to safe guard from the cyber crimes.

Unit - I **(12 Hr)**

Cyber Crime and Criminal Justice: Concepts of Cyber crime and the IT ACT 2000 - Hacking - Cyber Fraud and Cyber Cheating - Virus on the Internet - Defamation, Harassment and E-Mail Abuse - Other IT Act Offences - Jurisdiction and Cyber Crimes - Nature of Cyber Criminality, Strategies to Tackle Cyber Crime and Trends - Criminal Justice in India and Implications on Cyber Crime.

Unit - II **(12 Hr)**

Basic Concepts of Technology and law: understanding the technology of internet - Scope of Cyber Laws - Cyber jurisprudence - Law of digital contracts - The Essence of Digital Contracts - The system of Digital Signatures - The role of function of Certifying Authorities.

Unit - III **(12 Hr)**

Intellectual property issues in cyber space: Domain Names and related issues - Copy right in the Digital media - Patents in the Cyber world - E-Governance - Cyber crimes and cyber laws.

Unit - IV **(12 Hr)**

Information technology Act 2000 : Information Technology Act - 2000 - 1 (Sec 1 to 13) - Information Technology Act - 2000 - 2 (Sec 14 to 42 and Certifying authority Rules) - Information Technology Act 2000 - 3 (Sec 43 to 45 and 65 to 78).

Unit - V **(12 Hr)**

Information Technology Act 2000 - 4 (Sec 46 to Sec 64 and CRAT Rules) - Information Technology Act - 2000 - 5 (Sec 79 to 90) - Information Technology Act - 2000 - 6 (Sec 91 - 94) - Information Scenario in Cyber Laws.

BOOKS FOR STUDY

1. "Hand book of Cyber laws", V.Sharma, Macmillan India Limited, 2003.
2. Vivek Sood "Cyber Law Simplified "Tata McGraw - Hill Companies.

BOOK FOR REFERNCE

1. E-Commerce - Kamlesh k Bajaj and Debjani Nag.

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Sem. II **Hours/Week: 4**
14PCC2202 **Credits: 4**

Core Elective-II (WS):

OFFICE AUTOMATION

Objectives

* To impart the knowledge about the office automation and the features of MS-Office.

Unit - I **(12 Hr)**

MS-Word: Creating and Saving a Word document - Applying basic formatting - working with styles - working with tables - mail merge - spelling and Grammar.

Unit - II **(12 Hr)**

MS-Excel: Creating and Saving an Excel work book - adding and formatting data in cells - working with tables and chart - Formulas and functions. Salary bills preparation - TDS.

Unit - III **(12 Hr)**

MS-PowerPoint: Creating and Saving Presentation - Basics of presentation - running and setting up a presentation - Enhancing PowerPoint presentations - Custom animations.

Unit - IV **(12 Hr)**

MS-Outlook: Configuring an Outlook account - Outlook user interface - arranging items in contents pane - composing and sending messages - reading messages - forwarding messages - managing contacts.

Unit - V **(12 Hr)**

MS Access: Introduction to Access - Creating a Simple Database and Tables - Entering and Editing Data - Finding, Sorting and Displaying Data.

TEXT BOOK

1. Sanjay Saxena: MS- Office 2007 in a Nutshell, Vikas Publishing House Pvt Ltd., 2011

BOOKS FOR REFERENCE

1. Kogent Solutions Inc.: Office 2007 in simple steps, Dreamtech publishing, 2009.

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Sem. III **Hours/Week: 3**
14PCC3111 **Credits: 3**

OOP WITH C++ AND JAVA

Objective

* To impart the knowledge and programming skills on object -oriented programming languages such as, C++ and JAVA

UNIT - I **(9 Hr)**

Introduction - Data types- Bit field integer -Operators-control structures-storage classes-user defined Data types-Reserved words-Standard I/O statements in C/C++/Java-Assignments for C programming-Object Oriented Programming concept-Objective of OOP-Different paradigms in OOP-programs structure in C++ - Data abstraction - Function overloading - Information hiding -Friend- More on information hiding.

UNIT - II **(9 Hr)**

Constructors -Dynamic memory management - Default constructors - Overloading constructor - Copy constructor - Destructors - Inheritance - class derivation -virtual base class- Binding in C++ - Polymorphism- concept of stream in C++ - File positioning functions -Error handling during file operations.

UNIT - III **(9 Hr)**

Java Programming Paradigm- Advantages of JAVA- Tools available for JAVA programming- Building Java applications - Building Java applets - Difference between Applet and Application - Class definition in Java- Constructors - Inheritance - Polymorphism - access specification in Java- Interfaces in Java- Package in Java.

UNIT - IV **(9 Hr)**

Built-in classes for Exception handling in Java - Mechanism of Exception handling in Java- Error Handling Exception classes

UNIT - V **(9 Hr)**

Basic of a thread- Synchronization and Inter thread communication -thread groups and Daemon- designing GUI with components and layout managers-Event handling- Drawing methods and Graphics objects.

BOOKS FOR STUDY

1. D. Samantha , “Object - Oriented Programming with C++ and JAVA”, Prentice Hall of India Pvt.Ltd., New Delhi ,2000.

BOOKS FOR REFERENCE

1. E.Balagurusamy,”Programming in ANSI C”, Tata McGraw Hill, New Delhi, Third Edition, 2004.
2. E.Balagurusamy, “Object - Oriented Programming with C++”, Second Edition, 2002.
3. C.Muthu, “Programming with JAVA”, Vijay Nicole Imprints Private Limited, Chennai, Second Edition, 2011.

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Sem. III **Hours/Week: 3**
14PCC3112 **Credits: 2**

Software Lab-III

OBJECT - ORIENTED PROGRAMMING

C and C++

1. Simple problems using Operators
2. Problems using Branching structures (If, switch, goto)
3. Problems using looping structures (for, while, do-while)
4. Problems on operations on single dimensional array
5. Problems using Matrix operations
6. Simple class and objects (only using C++)

Java

7. Program using Classes and Objects
8. Illustration of Constructor and Copy Constructor
9. Program for types of Inheritance
10. Simple program using Applet.

Sem. III **Hours/Week: 2**
14PCC3114B **Credits: 2**

MARKETING MANAGEMENT

Objectives

- To give basic knowledge on concepts of marketing management.
- To provide knowledge on the new developments in marketing.

Unit - I

Marketing - meaning - functions of marketing - Marketing Mix - Market Segmentation -Agricultural marketing, features, problems.

Unit - II

Product - meaning - features - classification - new product planning and development -Product Mix - Product Life cycle. Branding, Brand loyalty and equity, Packaging, ISO series and Agmark.

Unit - III

Pricing - meaning - Objectives - Factor affecting pricing - methods and types of pricing.

Unit - IV

Promotion - Meaning - Need - Promotion mix, Personal Selling - Meaning - Advantages-Limitations.

Unit - V

Customer Relationship Management - Service Marketing Applications - Marketing - retention strategies of some special fund and non - fund based financial services - leasing and hire purchase services - consumer finance, insurance and factoring - Mutual funds and credit cards.

Text Book

1. R.S.N. Pillai & Bagavathi, Modern Marketing, New Delhi, S.Chand & Co, 2000.

References

1. Rajan Nair. N., Sanjith R. Nair, Marketing, Sultan Chand & Sons, New Delhi, 2000.
2. Philip Kotler, Marketing Management, New Delhi ,Prentice Hall of India Ltd, 2001.
3. Stanton William, J.S. and Charles Futrell, Fundamentals of Marketing, New Delhi, McGraw Hill Book & Co, 2008.
4. Monga & Shalini Anand, Marketing Management, New Delhi, Deep & Deep publications, 2000.

Sem. III **Hours/Week: 2**
14PCC3114E **Credits: 2**

MODERN BANKING

Objectives

- To help the students to understand the meaning, importance and the economic and monetary implications of banking operations.
- To impart knowledge about the various forms of banking services.
- To gain insight in to E-banking services.

Unit - I

Banking Services - Meaning and Importance - Economic and Monetary implications of Banking Operations - Tangible Services - Deposits, Withdrawals and Lending - Intangible Services - Improved Customer Services - Deficiency in Services - Ways to Improve the Services.

Unit - II

Banking Services - Loans and Advances - Forms of Advances - General Loans, Overdrafts, Clean advances, Term advances, Consumer Loans, Foreign bills purchases, Advances against Hire purchase advances, Packing Credits - Import loan - Industrial advances - Advances to Small borrowers - Agricultural Financing-advances.

Unit - III

Regulations for Banking Services - Banking Regulation Act 1949 - RBI Act 1934 - Negotiable Instrument Act 1881- Endorsement, Crossing of Cheques, Payment of Cheques, Collection of Cheques, Bills of Exchange and Promissory Notes, Rights and Liabilities of parties to Negotiable Instrument - Relationship between Banker and Customer.

Unit - IV

E - Banking Services - Internet Banking - Phone Banking - Mobile Banking - ATM's - Debit Card - Credit Card.

Unit - V

Banking sector reforms - Basle Norms - Capital Adequacy - Globalised Challenges in Banking Services - New Trends in Banking Services - Measurement of Service Quality - SERVQUAL.

Text Book

1. Sundram & Varshney, 'Banking and Financial System', Sultan Chand & Sons

Reference Books

1. B.S.Khubchandani, 'Practice and Law of Banking', Mac Millan India Ltd 2000.
2. K.C.Nanda, 'Credit and Banking', Response Book, Sage Publications, 1999.
3. Dr.S.Gurusamy, 'Financial Services & System', Vijay Nicole imprints Pvt Ltd.
4. H.L.Bedi & V.K.Hardikar, 'Practical Banking'.
5. C.Jeevanandan, 'Practice & Law of Banking'.

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Sem. III **Hours/Week: 2**
14PCC3114A **Credits: 2**

ENTREPRENEURIAL DEVELOPMENT

Objectives

- To give basic knowledge on concepts of Entrepreneurship Development.
- To motivate the students to take up entrepreneurship

Unit - I

Concept of Entrepreneurship - Meaning - Types - Qualities of an Entrepreneur - Classification of Entrepreneurs - Factors influencing Entrepreneurship - Functions of Entrepreneurs.

Unit - II

Entrepreneurial Development - Agencies Commercial Banks - District Industries Centre - National Small Industries Corporation - Small Industries Development Organization - Small Industries Service Institute. All India Financial Institutions - IDBI - IFCI - ICICI - IRDBI.

Unit - III

Project Management Business idea generation techniques - Identification of Business opportunities - Feasibility study - Marketing, Finance, and Technology & Legal Formalities - Preparation of Project Report - Tools of Appraisal. Economic development and entrepreneurial growth Role of entrepreneur in economic growth - Strategic approaches in the changing economic scenario for small scale Entrepreneurs - Networking, Niche play, Geographic concentration, Franchising / Dealership - Development of Women Entrepreneurship.

Unit - IV

Importance of small scale industries - Definition - Contribution to national economy - Classification of small scale units - Cottage, tiny, village, ancillary, KVI Cent. Industrial Estates - Concept, infrastructure for small business units. Procedures in setting of small scale units - Licensing - Registration - Financing - Working capital - Financing institutions.

Unit - V

Institution for the development of small scale industries - NSIC, SIDCO, SIDO, SISI, Development Commissioner - TANSI, SIDCO, DIC, Directorate of Industries and Commerce. Concessions, rebates, incentives and subsidies to small scale units - Prime Minister's Rojkar Yojna (PMPY) EPZ and 100% EOUs, sickness of small scale units and revival.

TEXT BOOK

1. Vasant Desai "Dynamics of Entrepreneurial Development and Management", Himalaya Publishing House, 2009.

REFERENCE BOOKS

1. Srinivasan N.P. - Entrepreneurial Development
2. Saravanavel - Entrepreneurial Development
3. Vasant Desai - Project Management
4. Jayashree Suresh - Entrepreneurial Development
5. Holt - Entrepreneurship - New Venture Creation
6. J.S. Saini & S.K. Dhameja - Entrepreneurship and Small Business.
7. P.C. Jain - Handbook for New Entrepreneurs.
8. C.B. Gupta & S.S. Khanka - Entrepreneurship and Small Business.

Sem. III **Hours/Week: 2**
14PCC3114C **Credits: 2**

HUMAN RESOURCE MANAGEMENT

Objectives

- To enable the students to understand the important concepts of personnel management.
- To develop the students to be aware of the Human Resources.

Unit - I

Evolution, role and status of Human Resource Management in India - Structure and functions of HRM - Systems view of HRM.

Unit - II

Manpower Planning - Concept, organization and practices, manpower planning techniques -short term and long term planning.

Unit - III

Recruitment and Selection Skill - Job analysis - Description - Job Specification - Selection Process - Tests and interviews - Placement and induction. Performance appraisal -purpose - Factors affecting performance appraisal.

Unit - IV

Training and development - Need and Importance - Assessment of training needs - Training and development and various categories of personnel - Career planning and development -Career counseling, promotions and transfers - Retirement and other separation processes.

Unit - V

Wages and Salary administration - Developing a sound compensation structure - Regularity provisions - Incentives - Grievance handling and discipline - Developing grievance handling and discipline - Development grievance handling systems - collective bargaining -Managing conflicts.

Text Book

1. Pravin Durai, “Human Resource Management”, Pearson Education Books, New Delhi, 2010.

References

1. Edwin Flipp, Personnel Management, New Delhi, McGraw Hill Publications, 2009.
2. Davis & Newstrom, 2000, Human Behaviour at Work, New Delhi, McGraw Hill Publications.
3. Fred Luthans, 2000 Organisational Behaviour, New Delhi, McGraw Hill Publications.
4. Stephen P. Robins, 2001 Organisational Behaviour, New Delhi, Prentice Hall of India.

Sem. III **Hours/Week: 2**
14PCC3114D **Credits: 2**

CUSTOMER RELATIONSHIP MANAGEMENT

UNIT - I

Customer Relationship Management Fundamentals- Theoretical perspectives of relationship, Evolution of relationship marketing, Stages of relationship, Issues of relationship, Purpose of relationship marketing, Approach towards marketing: A paradigm shift, Historical Perspectives, CRM Definitions, Emergence of CRM practice:, CRM cycle, Stakeholders in CRM, Significance of CRM, Types of CRM, Success Factors in CRM, CRM Comprehension, CRM Implementation.

UNIT - II

Customer Satisfaction: Meaning, Definition, Significance of Customer Satisfaction, Components of Customer Satisfaction, Customer Satisfaction Models, Rationale of Customer Satisfaction, Measuring Customer Satisfaction, Customer satisfaction and marketing program evaluation, Customer Satisfaction Practices, Cases of Customer Satisfaction.

UNIT - III

Service Quality: Concept of Quality, Meaning and Definition of Service Quality, Factors influencing customer expectation and perception, Types of Service Quality, Service Quality Dimensions, Service Quality Gaps, Measuring Service Quality, Service Quality measurement Scales.

UNIT - IV

Customer Relationship Management: Technology Dimensions - E- CRM in Business, CRM: A changing Perspective, Features of e-CRM, Advantages of e-CRM, Technologies of e-CRM, Voice Portals, Web Phones, BOTs, Virtual Customer Representative, Customer Relationship Portals, Functional Components of CRM, Database Management: Database Construction, Data Warehousing, architecture, Data Mining. Characteristics, Data Mining tools and techniques, Meaning, Significance, Advantages, Call Center, Multimedia Contact Center, Important CRM softwares.

UNIT - V

Customer Relationship Management: Emerging Perspectives: Employee-Organisation Relationship, Employee- Customer Linkage, Factors effecting employee's customer oriented behavior, Essentials of building employee relationship, Employee customer orientation, Service Failure, Service

Recovery Management, Service Recovery Paradox, Customer Life time value, customer profitability, customer recall management, customer experience management, Rural CRM, , customer relationship management practices in retail industry, hospitality industry, banking industry, telecom industry, aviation industry.

Text Book

1. Alok Kumar Rai : Customer Relationship Management: Concepts and Cases (Second Edition)-PHI Learning

References

1. Simon Knox, Adrian Payne, Stan Maklan: Customer Relationship Management- Routledge Inc.
2. Bhasin-Customer Relationship Management (Wiley Dreamtech)
3. Dyche-Customer relationship management handbook prentice hall
4. Peelan-Customer relationship management prentice hall
5. Kristin Anderson, Carol Kerr : Customer relationship management, McGraw-Hill Professional
6. Chaturvedi-Customer Relationship Management (Excel Books)
7. Sheth J N, Parvatiyar A. and Shainesh G.: Customer relationship management: , Emerging Concepts, Tools, & Applications, Tata McGraw-Hill Education.

Sem. III **Hours/Week: 4**
14PCC3403 **Credits: 4**

IDC-II (BS):
ERP FOR MANAGEMENT

Objectives

- To understand about ERP systems.
- To know about ERP software and modules, Implementation of ERP, and Emerging trends on ERP.

Unit - I:

ERP AND TECHNOLOGY **(12 Hr)**

Introduction - Related Technologies - Business Intelligence - E-Commerce and E-Business - Business Process Reengineering - Data Warehousing - Data Mining - OLAP - Product life Cycle management - SCM - CRM.

Unit - II:

ERP IMPLEMENTATION **(12 Hr)**

Implementation Challenges - Strategies - Life Cycle - Pre-implementation Tasks - Requirements - Methodologies - Package selection - Project Teams - Process - Vendors and Consultants - Data Migration - Project management - Post Implementation Activities.

Unit - III:

ERP IN ACTION & BUSINESS MODULES **(12 Hr)**

Operation and Maintenance - Performance - Maximizing the ERP System - Business Modules - Finance - Manufacturing - Human Resources - Plant maintenance - Materials Management - Quality management - Marketing - Sales, Distribution and service.

Unit - IV:

ERP MARKET **(12 Hr)**

Marketplace - Dynamics - SAP AG - Oracle - PeopleSoft - JD Edwards - QAD Inc - SSA Global - Lawson Software - Epicor - Intuitive.

Unit - V **(12 Hr)**

Enterprise Application Integration - ERP and E-Business - ERP II - Total quality management - Future Directions - Trends in ERP.

TEXT BOOKS

1. Alexis Leon, “ERP DEMYSTIFIED”, Tata McGraw Hill, Second Edition, 2008.
2. Mary Sumner, “Enterprise Resource Planning”, Pearson Education, 2007.

REFERENCES

1. Jim Mazzullo,”SAP R/3 for Everyone”, Pearson, 2007.
2. Jose Antonio Fernandz, “ The SAP R /3 Handbook”, Tata McGraw Hill, 2008..
3. Biao Fu, “SAP BW: A Step-by-Step Guide”, First Edition, Pearson Education, 2003.

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Sem. IV **Hours/Week: 6**
14PCC4116 **Credits: 5**

MANAGERIAL SKILLS

Objectives

- To understand about Management thoughts
- To impart knowledge on managerial skills

UNIT - I:

THINKING STRATEGIES **(18 Hr)**

Strategic thinking - Concepts- Need - Process - Meaning -competencies - importance- Lateral Thinking - Concepts-Need- Applications- Benefits- Techniques used in Lateral Thinking -Conventional Vs Lateral Leaders.

UNIT - II:

INTERPERSONAL STRATEGIES **(18 Hr)**

Conflict Resolution - Concepts - sources of conflict - role of perception in conflict - steps of Conflict Resolution - Conflict handling matrix - Functional and Dysfunctional outcome of conflict. Negotiation skills - process - styles - outcome - principles - negotiation model - being a negotiatior - qualities of a negotiator. Level V leader-Becoming a level V leader - attributes of level V leader - the level V hierarchy.

UNIT - III:

IMPLEMENTATION STRATEGIES **(18 Hr)**

Change - Concepts - Facing changes - meaning - characteristics -why changes - impact of resistance -Reasons for resistance - types of people in facing changes - introducing change. Facing challenges - meaning - importance - path to facing challenges - benefits of facing challenges.

UNIT - IV:

ACTION BASED STRATEGIES **(18 Hr)**

Risk taking - meaning - factors determining Risk Taking - Risk management - users of Risk Management - Steps in Risk Management. Effective decision making - meaning - approaches - methods - steps - Decision making at the work place. Corporate Mentoring - from mentors perspective - from mentees perspective - mentoring Vs Coaching - mentoring techniques - types of mentoring - mentoring traits - mentoring programme.

UNIT - V:

BEHAVIOURAL STRATEGIES **(18 Hr)**

Motivation and staying motivated - meaning - finding reason for being motivated - staying motivated at work place - staying motivated in negative work environment - staying motivated during crisis. Work life Balancing - meaning - work satisfaction - gender differences - responsibility of the employers and employees - ways of balancing work and life - handling professional and personal demands - organizing your desk.

Text Book

1. Stephen covey, 'The Seven Habits of Highly Effective people' 2009.

REFERENCE BOOKS

1. Daniel Goleman, 'Emotional Quotient' -.2009
2. Norman Vincent Peale, 'Power of the Plus factor', 2010.
3. Dr.K.Alex, 'Managerial skills', Person Publication, New Delhi. 2013

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Sem. IV **Hours/Week: 4**
14PCC4402 **Credits: 4**

IDC-III:
TALLY

Objectives

- To enable students to learn basic concepts and applications of accounting software.
- To help students to acquire skills of operating Accounting software effectively.

Unit - I: **(12 Hr)**

Introduction to Accounting Software - Features of Computerized Accounting - Introduction to Tally - Features of Tally - Creation- alteration and Deletion of Company - Company details - Accounting Features (F11) - Accounting groups - Predefined groups - User defined groups (creation, alteration and deletion) - Ledgers (Creation, alteration and deletion) - Preparation of Final accounts with adjustments and Balance sheet using ledger balances.

Unit - II: **(12 Hr)**

Accounting Vouchers - various types of accounting Vouchers and their short cut keys - Voucher entries in Double and single entry mode - Day book - Cost Centre - Cost categories - cost centre class - Bill wise details - Interest calculation.

Unit - III: **(12 Hr)**

Budgets creation and alteration - Variance analysis - pay roll preparation - Statutory Features (F11) - Voucher entries using TDS, TCS & VAT.

Unit - IV: **(12 Hr)**

Inventory Masters: Creation, alteration and deletion of Stock groups, Stock categories, Units of Measures, Godowns and Stock items- Batch wise details - Bill of materials-Purchase and sales order processing - Pure Inventory Vouchers - Entries in Accounting and Inventory vouchers using stock items.

Unit - V: **(12 Hr)**

F12 - Configurations - Accounting and Inventory books - Statements of Accounts and Inventory - Group Company - Security control - Tally Audit - BRS - Extraction of Ratios, Cash flow and fund flow statement.

TALLY PRACTICAL

1. Creation, alteration and deletion of companies and user defined Accounting groups.
2. Creation, alteration and deletion of ledgers and final accounts and Balance sheet preparations.
3. Voucher entries in double entry mode.
4. Voucher entries in single entry mode.
5. Voucher entries using Cost centre and Cost categories.
6. Voucher entries using bill wise details and interest calculation.
7. Creation and alteration of budgets and variance analysis.
8. Creation, alteration and deletion of inventory masters.
9. Accounting voucher entries using stock items.
10. Order processing and voucher entries using accounting and inventory vouchers.
11. Payroll preparation and applying TDS and TCS.
12. Generation of Accounting and Inventory Reports.

TEXT BOOK

1. AK Nadhani, Simple Tally 9, BPB Publications, Chennai, 2008.

BOOKS FOR REFERENCE

1. Vishnu P. Singh, “Tally. Erp 9”, Computech Publications Ltd, NewDelhi, 2006.
2. Srinivasa Vallaban, Computer Applications in Business, Sultan Chand and sons, Chennai, 2006.

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Sem. IV **Hours/Week: 4**
14UCC430213 **Credits: 4**

AUDITING

Objectives

- To enable the students to have basic knowledge on the principles and practices of Auditing.
- To help the students to know the various aspects of EDP Auditing and to help them to use ICT techniques

Unit - I **(12 hrs)**

Audit - Origin, definition, objectives, Classifications and advantages - book keeping and accountancy, auditing and investigation - qualities of an auditor - test check - meaning and objectives of internal check - auditors duty with regard to internal check - consideration at the commencement of a new audit - audit programme - audit note book - working papers.

Unit - II **(12 hrs)**

Vouching - meaning - voucher - points to be noted in a voucher - internal check as regards cash - vouching the debit side and credit side of the cash book - vouching of trading transactions - internal check as regards purchases - auditor in connection with credit purchases, purchase return, credit sales, the duties of an auditor in connection with credit sales.

Unit - III **(12 hrs)**

Verification and valuation of assets and liabilities - meaning of verification - problems in the valuation of assets - valuation of assets during inflationary period - fixed assets - mode of valuation of floating of fixed assets - floating valuation of wasting assets - verification of assets - verification of liabilities, share capital, trade creditors, bills payable, outstanding expenses, contingent liabilities.

Unit - IV **(12 hrs)**

Audit of joint stock companies - qualifications and - disqualification appointment, rotation, and removal of auditor - remuneration and expenses of an auditor' - powers and duties of an auditor - status of an auditor - auditors lien - duty of an auditor in connection with the payment of dividends - auditors report. Liabilities of an auditor under Companies Act, law of agency - liability of an auditor to third parties.

Unit - V **(12 hrs)**

EDP Auditing - definition - Need for Control - Effects of EDP Auditing - Foundations of EDP Auditing - steps in EDP Audit - Some major Audit Decisions - Legal influences of EDP Audit - Division of Auditing in EDP Environment - Online Computer Systems.

TEST BOOK

1. B.N.Tandon, (2000), Principles of Auditing, S.Chand & Company, New Delhi.
2. Ravinder Kumar and Virender Sharma (2009), Auditing principles and practice, PHI learning PVT Ltd. Revised Edition, New Delhi.

BOOKS FOR REFERENCE

1. Ghatalaia, Spicer and pegler's Practical Auditing, S. Chand & C.O., % New Delhi
2. Depaula (1990) "Principles of Auditing", Deep & Deep Publishing house, Delhi.
3. Dicksee, (2000) "Principles of Auditing", Vikas Publishing House, New Delhi.
4. Batlibai, (2000) Principles of Auditing S. Chand & Co-New Delhi.
5. Practical Auditing, Margham Publication, Chennai, 2012.

Sem. V **Hours/Week: 4**
14UCC530301A **Credits: 4**

Core Elective-I

BUSINESS MANAGEMENT

Objective

- To familiarize the students with the basics of principles of management.
- To enable the students become socially conscious managers.

UNIT - I **(12 hrs)**

Introduction; Concept, nature, process, functions and significance of management; Development of management thoughts; management principles- Managerial roles.

UNIT - II **(12 hrs)**

Planning: Concept, process, and types. Decision making: concept and process; Bounded rationality; Management by objective; Environment analysis and diagnosis; Strategy formulation. Human resource management: Concepts, Role and Functions.

UNIT - III **(12 hrs)**

Organizing: Concept, nature, process, and significance; Authority and responsibility relationships; Centralization and Decentralization; Departmentation; Organization structure - forms and contingency factors - Conflict and Coordination.

UNIT - IV **(12 hrs)**

Motivation - concept; Theories - Maslow, Herzberg, McGregor, and Ouchi; Financial and non - financial incentives. Management of Change; Concept, nature, and process of planned change. Strategic management: concepts, Theories.

UNIT - V **(12 hrs)**

Leadership - concept and leadership styles; Leadership theories - Likert's System management. Communication - nature, process, networks and barriers; Effective communication. Managerial control; concept and process; Techniques of control - Traditional and modern.

Text Books

1. L.M. Prasad "Principles and Practice of Management ", Sultan Chand & Sons, New Delhi, 2001.
2. G.B. GUPTA "Business Organization and Management" Sultan Chand & Sons, New Delhi, 2002.

Books for References

1. J.Jayasankar, "Priciples of Management" Margham Publications, Chennai, 2011.
2. E.Dharmaraj, "Principles of Management" SIMRES Publications, Chennai, 2010.

Sem. V **Hours/Week: 4**
14UCC530302 **Credits: 4**

Core Elective-II

E-COMMERCE

Objectives

* To enable students to get exposed to fundamental aspects of E-commerce.

Unit I : E - Commerce **(12 hrs)**

Definitions - Needs and Importance - E-commerce Vs Traditional Commerce - Advantages, Impact of Internet on Business - Evolution and Growth in India - Environment and opportunities - Classifications.

Unit II: Technologies and Models for electronic commerce **(12 hrs)**

Electronic market place technologies - Electronic data interchange - Http, TCP/IP - HTML - XML- electronic commerce with WWW \ internet.

Unit III : Approaches to safe E-commerce **(12 hrs)**

Overview - safe transport protocols - secure transactions - secured electronic payment protocol - SET certificates for authentication - Security on web servers and enterprise networks - conclusion.

Unit IV: E -cash and payment schemes **(12 hrs)**

Internet monetary payment and security requirements - payment and purchase order process - online electronic cash.

Unit V: Security **(12 hrs)**

Need for computer security - specific intruder approaches - security strategies and tools - Encryption - Enterprise networking and access to internet - Antivirus programs - security teams .

Text Books

1. Web commerce technology handbooks - Daniel Minoli, Emma Minoli.

BOOKS FOR REFERENCE

1. E-Commerce - Kamlesh K Bajaj and Debjani Nag.

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Sem. V **Hours/Week: 2**
14UCC540601 **Credits: 2**

Skill Based Elective:

COMPUTER APPLICATIONS IN BANKING

Objectives

- To impart practical knowledge on e-banking
- To know the recent development in e-banking system.

UNIT I **(6 hrs)**

Banking - meaning - Functions - Banker customer relationship - Bank deposits - Banking sector: Corporate, Retail, International and Rural.

UNIT II **(6 hrs)**

Structure of Indian Banking System: RBI - Objectives - functions - Commercial Banks - Regional Rural Banks - Cooperative banks.

UNIT III **(6 hrs)**

E-Banking: Meaning - ATM - Internet banking - ECS - EFT - Tele banking - Electronic Cheques - Credit cards - Debit cards - Smart card - risks.

UNIT IV **(6 hrs)**

Banking operations - Different approaches to mechanizations - Security information systems - Audit of computerized banking systems.

UNIT V: Approaches (Technologies) **(6 hrs)**

Bank computerization - computer in banks - Process for withdrawing cash Teller machines at Bank counters - Electronic Commerce - emerging trends - Internet as a Network Infrastructure - Business of internet commercialization electronic Commerce and WWW consumer Oriented Electronic commerce Electronic Payment Systems - Advertising and Marketing on the internet, Software agents - Working of Credit Cards and Debit Cards in India.

Text Book

1. Jyotsna Sethi, Nishwan Bhata, “Elements of Banking and Insurance”, PHI Learning P (Ltd), New Delhi, 2009. (Unit 1,2,3)

SUGGESTED READINGS: (Unit 4,5)

1. Sony and Agarwal: Computers and Banking, 2005.
2. Indian Institute of Bankers study material on ‘Introduction to Computers in Banking Industry, 2006.
3. Ravi Kalakota & Andrew B. Whinston: Frontiers of Electronic Commerce, Addison Wesley Publications, 2004.
4. Dr. M. Sri Nivas: e-Banking Services in India, Himalaya, 2006.
5. Vasanth Desai: Bank Management, Himalaya, 2005.
6. Revathy Sriram: Core Banking Solution: Evaluation of Security & Controls, PHI, 2000.

Sem. VI **Hours/Week: 4**
14UCC630303 **Credits: 4**

Core Elective-III (WS)

CUSTOMER RELATIONS MANAGEMENT

Objectives

- To understand how information technology can be aligned with business practices
- To provide means for successful delivery of CRM program.

Unit I **(12 hrs)**

Introduction to CRM - Cost of Acquiring Customers - Customer Acquisition to Customer Loyalty - CRM and Business Intelligence.

Unit II **(12 hrs)**

CRM Approach -drawbacks - emerging challenges in the marketing front-Relationship marketing-definition-concepts -relevance of relationship marketing approach-significance - building customer loyalty, Developing relationship strategies for different types of business under different competitive environment.

Unit III **(12 hrs)**

CRM and Customer Service - Call centre and customer Care - Automation of Contact Center - Call Routing - Web Based Self Service - Call Scripting - Cyber Agents - Work force Management - Customer Service - Automation. CRM in e-business, CRM - multi-channel , CRM on B2B, ERP - SCM - Supplier Relationship Management - Partner Relationship Management - e-Business Checklist for Success.

Unit IV **(12 hrs)**

Analytical CRM - CRM and the Data Ware House - Enterprise CRM - OLAP - Data Mining in CRM - Personalization and Collaborative Filtering - Delivering CRM - Defining CRM Success - Preparing Business Plan - Understanding Business Process - Choosing your CRM Tool.

Unit V **(12 hrs)**

CRM and sales force Automation - Objectives - features - benefits - Implementation Issues - Sales process activity management - Sales and territory management - Contact management - load management.

Books for study

1. Dyche J, (2002), The CRM Handbook, Pearson Education, New Delhi.

Reference Books

1. Sheth J N., Parvatiar A, Shainesh G, (2001), Customer Relationship Management - Emerging Concepts, Tools and Applications, Tata McGraw Hill, New Delhi.
2. Gosney JW & Boehm T P, (2001), Customer Relationship Management Essentials, Prentice Hall of India, New Delhi.

Sem. VI **Hours/Week: 2**
14UCC540601 **Credits: 2**

Skilled Based Elective:

PRACTICAL BANKING

Objectives

- To impart knowledge on banking activities.
- To know the different banking services to the society.

Unit I

Bank - Meaning - definitions - Banker - customer.

Unit II

Indian Banking System - Structure - RBI - Functions - Commercial Banks - Rural banks - Cooperative Banks-Ombudsman.

Unit III

Drawing - Endorsing and Crossing of Cheques.

Unit IV

Paying slips - Demand Draft applications and preparation of demand drafts -filling up of account opening forms of time and demand deposits.

Unit V

Drawing and Endorsing of Bill of Exchange and promissory notes.

Reference Books

1. M.Radlasawmy & S. Vasudevan, Banking.
2. Ashok Desai, Indian Banking.
3. H.L. Bedi, Practical Banking advance.

Sem. I **Hours/Week: 4**
14PCH1401 **Credits: 4**

IDC-I (WS):
INDUSTRIAL PRODUCTS

Objectives

- To learn some of the Industrial products like cement and glass and their manufacturing processes.
- To know the chemistry of dyes, pigments and paints.
- To know about plastics and fibres.
- To learn about fertilizers and fuels.

UNIT I: Cement and Glass

Cement - Composition, types - Portland cement - Composition, types, manufacture (Wet and Dry process), uses - Setting of cement, Glass-Composition, Types, Formation operations - Melting, Blowing, Pressing, Annealing and finishing.

Unit II: Pigments, Dyes and Paints

Pigments - Classification, Manufacture and uses; Dyes - Classification, preparation, Dyeing processes; Paints - Composition, Types, Manufacture and testing of Paints.

Unit III: Plastics and Fibres

Fibres - Natural and synthetic fibres, Artificial silk, rayon, nylon and Terylene; Plastics - composition, Classification, manufacture, properties and uses.

Unit IV: Fertilizers and Fuels

Fertilizers - Organic and Inorganic fertilizers, Preparation and uses, Fuels - Energy resources - Industrial gases, Water gas, Producer gas, Oil gas, natural gas, coal gas, Gobar gas, Indane gas, Petroleum products and coal products.

Unit V: Cosmetics

Shampoo- composition and its preparation, lipstick -preparation, Face cream and face powder -composition and their preparation. Hair dyes - chemical and herbal dyes. Perfumes and Deodorants.

REFERENCES

1. Kirk Othmer, Encyclopedia of Chemical Technology.
2. Charkarabarthy B N, Industrial Chemistry, Oxford and IBH Prb.Co.
3. Sharma B K, Industrial Chemistry, Goel Publishing House.

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Sem. IV **Hours/Week: 4**
14PCH4202B **Credits: 4**

Core Elective-IIB:

POLYMER CHEMISTRY

Objectives

- To understand the basic concepts of polymer chemistry.
- To study the stereochemical, morphological and other properties of polymers
- To study in detail the applications and kinetics of polymerization techniques.

Unit 1:

Introduction to Polymer Science **(12 Hrs)**

Polymer science-History - Concepts and terminology. Classification of polymers (with suitable examples) based on origin, structure, backbone, branching, action of heat, ultimate form and use, crystalline and amorphous behaviour Ladder, semi-ladder and spiro polymers.

Molecular forces in polymers - dipole forces, induction forces, dispersion forces, H-bond. Dependence of physical properties on intermolecular forces.

Monomers, structure and main features of some common polymers and polyurethane elastomers.

Inorganic polymers: Types of inorganic polymers, preparation, structure and properties of polyphosphazenes, polysiloxanes, polysilanes, polygermanes and polystannanes.

Unit 2:

Stereochemistry and Conformation of Polymers **(12 Hrs)**

Constitutional isomerism-positional isomerism and branching, substitutional isomerism (with suitable examples). Configuration and conformation of macromolecules: stereoisomerism-optical isomerism and geometrical isomerism, configuration of polymer chains-stereoregular polymers, tacticity in polymers-monotactic and ditactic polymers.

Experimental and spectroscopic methods for the determination of configuration, conformation of single macromolecule, conformation in the crystal, micro conformation in solution, ideal coil molecules in solution, compact molecules. Optically active poly(olefins), poly(amino acids), proteins. Conformational transitions.

Unit 3:

Morphology and Order in Crystalline Polymers **(12 Hrs)**

Polymer morphology: common polymer morphologies, structural requirements for crystallinity, degree of crystallinity, crystallizability-mechanism of crystallization Polymer single crystals: lamellar structure of polymers-fringed micelle concept, folded chain model, adjacent re-entry model, switchboard model.

Structure of polymers: crystallized from melt-super crystalline structures, spherulitic morphology, mechanism of spherulite formation. Theories of crystallization, kinetics- Avrami equation, Hoffman's nucleation theory, the entropic barrier theory. Strain induced morphology, cold drawing, morphology changes during orientation. Theory and application of XRD, SEM and DSC in determining the crystallinity of polymers.

Unit 4:

Polymer Solutions **(12 Hrs)**

Solubility of low molecular weight substances and polymers. Theories of polymer solubility, different stages of polymer solubility, non solvents, solubility of amorphous and crystalline polymers, solubility parameter concept. Thermodynamics of polymer solution:lattice theory-advantages and limitations of lattice theory,Flory-Huggins and Flory-Krigbaum theories -advantages and limitation of FH and FK theories, corresponding state theories, Flory temperature, polymer - solvent interaction parameter, the unperturbed polymer chain, expansibility factor, entropy,enthalpy and free energy of mixing of polymer solution, phase separation in polymer systems.The models of De Gennes and Edwards tube model (worm model), self avoiding random walk, scaling concepts in polymer systems, pearl model.

UNITV:

Kinetics of Polymer Chemistry **(12 Hrs)**

Kinetics of polymerization - Free radical polymerization - Cationic polymerization - Anionic polymerization - Emulsion polymerization-Number average molecular weight of polymers - Molecular weight by Cryoscopy, ebullioscopy, Osmotic pressure method - Average molecular weight determination - Light scattering method - Using ultra centrifugation by sedimentation equipment - Sedimentation velocity - Differential scanning colorimetry - Differential thermal analysis - Thermo gravimetric analysis - Models of viscoelastic behaviour - Hooke model -Newton model - Voigt model - Burger Maxwell model - Kelvin - Voigt model -Glass transition temperature - Measurement of Tg - molecular interpretation of Tg.

REFERENCES

1. Gowariker V R, Viswanathan N V, Sreedhar J, *Polymer Science*, New Age International (2011).
2. Billmeyer F W Jr., *Text book of Polymer Science*, Third Edition, John Wiley & Sons (1984).
2. Sperling LH, *Introduction to Physical Polymer Science*, Fourth Edition, Wiley-Inter science (2005).
4. Cowie JMG, Arrighi V, *Polymers: Chemistry and Physics of Modern Materials*, Third Edition, CRS Press (2007).
5. Bower DI, *An Introduction to Polymer Physics*, Cambridge University Press (2002).
6. Chanda M, *Introduction to Polymer Science and Chemistry, A Problem Solving Approach*, CRS Press (2006).
7. Flory PJ, *Principles of Polymer Chemistry*, Cornell University Press(1953).
8. de Gennes P G, *Scaling Concepts in Polymer Physics*, Cornell University Press (1979).
9. Teraoka, *Polymer Solutions: An Introduction to Physical Properties*, John Wiley & Sons, (2002).
10. Chandrasekhar V, *Inorganic and Organometallic Polymers*, Springer (2005).

Sem. III **Hours/Week: 6**
14PPS3101 **Credits: 5**

Common Core:

METHODS OF SPECTROSCOPY AND LASERS

Objectives

- To understand the basic concepts of molecular spectroscopy.
- To study in detail Raman and electronic spectroscopies.
- To study in detail NMR, NQR and ESR spectroscopies.

UNIT-I:

Rotational and Vibrational Spectroscopy **(16 Hours)**

Basic aspects of Spectroscopy-characterisation of electromagnetic radiation, quantization of energy. Microwave Spectroscopy-Rotation of molecules and selection rules, Diatomic molecules; Rigid and nonrigid rorator, Rotational constant and centrifugal distortion. Techiniques and instrumentation. Vibrational spectroscopy-diatomic molecules, Harmonic and anharmonic oscillators, zero point energy - force constant - fundamental absorption and overtones (hot bands, fermi resonance)- polyatomic molecules-techniques and instumentation of FTIR.

Unit II:

Raman and NMR spectroscopy **(16 Hours)**

-Raman spectroscopy - Raman and Rayleigh scattering - Quantum and classical theories of Raman effect - Pure rotational Raman spectra - Stokes and anti-stokes lines - Vibrational Raman spectra-Mutual exclusion rule - Polarised and depolarized Raman lines - Techniques and instrumentation.

NMR - Hydrogen nuclei - Chemical shift and spin - spin splitting - Coupling constant (*J*). Splitting with and without chemical exchange-instrumentation-Interaction between spin and magnetic field - Gyromagnetic ratio - FT NMR.

UNIT III:

ESR spectroscopy **(16 Hours)**

ESR-Principle-Position of ESR absorptions - *g* value - Hyperfine splitting - Zero field splitting - ESR spectrum of free radicals and copper salicyaldehyde complexes.

Moss Bauer spectroscopy -principles of Moss Bauer spectroscopy, Doppler shift, recoil energy, isomer shift, quadrupole splitting- applications to various compounds.

UNIT IV:

Electronic Spectroscopy **(16 Hours)**

Electronic spectra - Electronic spectra of diatomic molecules - Born - Oppenheimer approximation- vibrational coarse structure- Franck - Condon Principle-, Dissociation energy and dissociation products - rotational fine structure of electronic vibration -vibration transition - Fortrate Diagram. Electronic angular momentum in diatomic molecules-spectrum of Molecular hydrogen - Molecular photoelectron spectroscopy - UV photo electron spectroscopy and X-ray photo electron spectroscopy.

UNIT V:

Laser devices and their Applications **(16 Hours)**

Principle - pumping He-Ne laser Carbon di oxide laser, semi conductor laser-holography recording and reconstruction-applications laser induced fusion-fusion process- stimulated Raman scattering laser in isotope separation lidar-laser tracking- lasers in industry and medicine.

REFERENCES

1. Banwell C N, *Molecular spectroscopy,* New Delhi, TATA McGraw Hill Co. (1997).
2. Drago R S, *Physical Methods in Inorganic Chemistr,* New Delhi, East West Press Ltd, (1971).
3. Chang R, *Basic Principles of Spectroscopy,* New Jersy, Englewood Cliffs (1978).
4. Straughan B P and Walker S, *Spectroscopy Volume 1,2,3,* New York, London Chapman and Hall, A Halstet Press Book, John Wiley & Sons Ins. (1975).
5. Barrow G M, *Introduction to Molecular Spectroscopy,* Tata McGraw - Hill Edition (1993).
6. Gurdeep R Chatwal and Sham K Anand, *Spectroscopy,* Himalaya Publishing House (2009).

Sem. IV **Hours/Week: 4**
14UCH430301A **Credits: 4**

Core Elective:
MATERIAL SCIENCE

Objectives

- To know the properties and uses of polymers
- To know the methods involved in the processing of rubber materials
- To learn about plastic materials

Unit I:

High Polymers -Introduction -Nomenclature -Functionality -Classification of Polymers -Homo and hetero chain polymers -Addition polymerization – Condensation polymerization –copolymerization, polymerization -Mechanism of Addition Polymerization-Cationic -Anionic polymerization -Free radical and Co-ordination or Ziegler-Natta polymerization-Effect of Heat on Polymers -Mechanical Properties of Polymers.

Unit II:

Polymers in Medicine and Surgery -Conducting Polymers -Some Physical and Mechanical Properties of Polymers-Crystallinity in Polymers.Effect of polymer structure and properties -Strength, plastic deformation-chemical resistance -Physical state of polymer -Glass Transition Temperature -Polymer Reaction.

Unit III:

Introduction to Rubber -Latex -Processing Latex -Mastication -Compounding of Rubber -Vulcanizations of Rubber -Engineering Polymers, Thermoforming -Degradation stability and environment.Synthetic rubbers -Preparation and applications of SBR -Butyl rubber -Nitrile rubber -Neoprene and Silicone rubber.

Unit IV:

Plastic Materials -Classification of Plastics (or Resins) -Moulding Constituents of a Plastic -Fabrication techniques used for thermoplastic resin (Moulding process).Important Thermoplastic Resins-Natural resins -Celluloses -Polyethylene -PVC.

Unit V:

Important thermosetting resins-Phenol Formaldehyde Resin or Pheonolic Resin -Amino Resins and Plastics -Epoxy Resins -Acrylic Resins and Plastics

-Polyester resins. Silicone Resins -Silicone fluids -Silicone greases – Polyurethane's -Foamed or cellular plastics.

Reference

1. Industrial Chemistry, B.K. Sharma, Industrial Chemistry, Goel publishing house, Meerut, 1997.

Sem. IV **Hours/Week: 4**
14UCH430301B **Credits: 4**

Core Elective:
HEALTH AND HYGIENE

Objectives

- To know and accept individual and collective responsibility for healthy living at home, school and in the community.
- To help students know their health status, identify health problems and be informed for taking appropriate remedial measures.
- To acquaint them with first-aid measures about common sickness and injuries.

Unit – I: Maintenance of Health

Concept of health and Hygiene and their relation to successful living. Food pyramid, Determinants of health, building of good health habits, immunization, correction of defects, maintenance of health records.

Unit – II: Physical Health

Care of skin, hair, teeth, eyes, ears, hand and feet, Rest and sleep, exercise, activity, recreation, posture, Food and nutrition, elimination, Hygiene of eating and drinking, menstrual hygiene.

Unit – III: Mental Health.

Characteristics of mentally healthy person, Mental hygiene in intrauterine, infancy, childhood, adolescence, adulthood and old age. Health destroying habits and addictions - Pan, Supari, Ganja, Drinking, Smoking.

Unit – IV: Common diseases and their treatment

Cancer – types, causes and their treatment, Water borne diseases-Jaundice, Malaria, Typhoid, Dysentry and their treatment. Fever, Headache, Vomiting and Ulcer- causes and their treatment.

Unit - V: First Aid

Introduction to First Aid, First Aid Equipment, The Unconscious, Casualty, Blood Loss and Shock, Burns, Fractures Head Injury, Sports Injuries, Moving, Handling & Transporting Casualties.

References

1. Cherilyn Tillman, Principles of Occupational Health and Hygiene – an introduction, Allen & Unwin, Sydney, 2007
2. Fryer, Jane Eayre, Fist Aid Book, The John C. Winston Company.

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Sem. V **Hours/Week: 4**
14UCH530302A **Credits: 3**

Core Elective:
SELECTED TOPICS IN PHYSICAL CHEMISTRY

Objectives

- To learn the basics of physical methods.
- To understand about thermo chemistry.
- To understand about acids and bases.
- To understand about adsorption and colloids.
- To know the fundamentals and applications of radiation chemistry.

Unit I:

Analytical methods III **(12 Hours)**

Fundamentals and instrumental techniques for – critical solution temperature, heat of neutralization, transition temperature, kinetics of ester hydrolysis, persulphate-iodide, inversion of sucrose by polarimetry, conductometric and potentiometric acid-base and redox titrations, viscosity, rast method, partition coefficient and phase diagram.

Unit II:

Thermo chemistry **(12 Hours)**

Change of internal energy-change of enthalpy in chemical reaction-exothermic and endothermic reactions- relation between heats of reaction at constant volume and pressure- standard enthalpy changes of reactions-determination- Kirchhoff equation- Hess's law- applications- bond energies-applications.

Unit III:

Acids and Bases **(12 Hours)**

Dissociation of weak acids and bases-pH scale – common ion effect- buffer solution-buffer action- Henderson equation- Hydrolysis of salts- its determination – acid base indicators – theories of acid base indicators-solubility product and its applications.

Unit IV:

Colloids **(12 Hours)**

Colloidal systems – classification-preparation – purification-properties-determination of size of particles- surfactants- micelle formation – solubilization- micellar catalysis- emulsification – micro emulsions- gels and their preparation.

Unit V: Radiation Chemistry **(12 Hours)**

Introduction to radiation chemistry – Primary and secondary process – radiolysis of water – hydrated electrons – Radiolysis of Fricke dosimeter solution – radiation dosimetry- industrial applications of radiation-processing of polymers-sterlisation of medicinal products- conservation of environment- applications of radio isotopes in health care.

REFERENCES

1. Venkateswaran V, Veeraswamy R., Kulandaivelu A.R., Basic Principles of Practical Chemistry, (2nd edition), New Delhi, Sultan Chand & Sons (1997).
2. Puri B.R., Sharma L.R., Pathania M.S., Principles of Physical Chemistry, (23rd edition)New Delhi, Shoban Lal, Nagin Chand & Co., (1993) [Textbook]
3. Atkins P.W., Physical Chemistry, (5th edition) Oxford University Press, London (1994).
4. Sood D.P., Reddy A.V.R.,Rama moorthy N., Fundamentals of Radio Chemistry, Indian Association of Nuclear Chemists and Allied Scientists, Mumbai (2000).

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Sem. V **Hours/Week: 4**
14UCH530302B **Credits: 3**

Core Elective:
SELECTED TOPICS IN CHEMISTRY-I

Objectives

- To learn the basics of Green chemistry
- To learn the basics of nano chemistry.
- To know the fundamentals of nuclear magnetic resonance
- To understand about mass spectrometry
- To know the fundamentals and applications of statistical thermodynamics.

Unit I:

Green Chemistry

Need- principles- planning of green synthesis- examples of green reactions from condensation, oxidation, reduction, rearrangement and addition reactions- microwave and sonication reactions.

Unit II:

Nano chemistry

Introduction – nano and nature-Preparation of nano materials-characterization of nano materials by SEM and TEM- Carbon nano tubes-applications of nano materials in biology, sensos, medicines.

Unit III:

Nuclear magnetic spectroscopy

Spin angular momenta-magnetic moments- instrumentation- chemical shifts-spin –spin coupling- simple applications.

Unit IV:

Mass spectroscopy

Instrumentation – Base peak, isotopic peaks, metastable peak, parent peak, determination and use of molecular formula, recognition of molecular ion peak . Fragmentation – General rules – Pattern of fragmentation for various classes of compounds, McLafferty rearrangement, Importance of metastable peaks.

Unit V:

Statistical Thermodynamics

Permutations and combinations-Combinatory rule - probability theorems. -

Microstates, macrostates - Methods of counting microstates of distinguishable and indistinguishable particles-Phase space-Thermodynamic probability-Statistical equilibrium-. Maxwell--Boltzmann statistics -Derivation of M.B. statistics-Relationship between entropy and probability-Statistical meaning of third law of thermodynamics.

References

1. Ahluwalia V. K. Green Chemistry,Ane Books Ltd., Chenai (2009).
2. Padeep T, Nano: The Essentials,Tat McGraw- Hill Pub. Co. Ltd., NewDelhi (2009).
3. Puri B.R., Sharma L.R., Pathania M.S., Principles of Physical Chemistry, (23rd edition)New Delhi, Shoban Lal, Nagin Chand & Co., (1993).
4. Atkins P.W,Physical Chemistry, (5th edition) Oxford University Press, London (1994).
5. Kuriakose. J.C. and Rajaram J.C. Thermodynamics Jalandar Shoban Lal Co., New Delhi (1996).
6. Gupta M. C., Statistical Thermodynamics, Wiley-Eastern Limited, Madras (1997).

Sem. VI **Hours/Week: 4**
14UCH630303B **Credits: 4**

Core Elective:

PHARMACEUTICAL CHEMISTRY

Objectives

- To know drugs Acting on Central Nervous System
- To know analgesics and antiseptics
- To know the drugs acting on central nervous system
- To know cardiovascular agents

Unit – I: Drugs Acting on Central Nervous System - I

General Anaesthetics: Intravenous anaesthetics, mechanism of anaesthetic action. Hypnotics and Sedatives: Classification, chemistry, pharmacological actions, pharmacokinetics and adverse effects of barbiturates, benzodiazepines, BZD antagonist.

Unit – II: Analgesics and Antiseptics

Opioid Analgesics: Morphine and codeine and their synthetic modifications, opioid antagonists. Antiepileptics: Epilepsises, Classification, chemistry, treatment of epilepsises.

Unit – III: Drugs Acting of Central Nervous System - II

Antiparkinsonism drugs: Dopamine replacements, dopamine releasers, dopamine agonists. Anticonvulsant Drugs: Barbiturates, hydantoins, oxazolidinediones, succinimides.

Unit – IV: Psychotropic and pharmacological Agents

Antipsychotic Drugs: Psychosis, classification, mechanism of actions, adverse effects.

Antianxiety Drugs: Anxiety, classification, treatment of anxiety.

Antidepressants: MAO inhibitors, classification, mechanism of action of tricyclic and related Antidepressants.

Antamanic Drugs: Mechanism, pharmacokinetics and control of therapy.

Hallucinogens: Introduction of indoleamines and cannabinoids.

Unit – V: Cardiovascular Agents - I

CNS–Stimulants: Classification and introductory ideas of different classes, cognition enhancers.

Antianginal Agents and Vasodilators: Intermediary myocardial metabolism, nitrovasodilators metabolism and antianginal action, calcium antagonists.

REFERENCE

1. Jeyashree Ghosh, A Text book of Pharmaceutical Chemistry, Tata McGraw Hill Publishing, New Delhi (1993).

Sem. VI **Hours/Week: 3**
14UCH630304A **Credits: 3**

Core Elective:

SELECTED TOPICS IN CHEMISTRY-II

Objectives

- To study the concepts of acids, bases and non-aqueous solvents
- To learn alloys and other inorganic polymers
- To understand the significance and role of metal ions in biological systems
- To study the fundamentals of photochemistry
- To study the fundamentals of adsorption and group theory

Unit I: Acid-Base Chemistry and Non-aqueous solvents (9 Hours)

Acid Base Chemistry: Theories of acids and bases – Arrhenius, Bronsted-Lowry, Lewis, Lux Flood and Usanovich and Solvent system concept. HSAB principle

Non-aqueous solvents: Classification of solvents – Water and liquid ammonia as solvents.

Unit II: Bio-inorganic Chemistry (9 Hours)

Metal ion in biology and their vital role in the active site, Structure and functions of Metallo proteins and enzymes. Ion transport mechanism in cell membrane – Na and K pumps- Ionophores – Structures and characteristic features of Haemoglobin and myoglobin – Vitamin B_{12}.

Unit III: Alloys and Inorganic Polymers (9 Hours)

Mechanical properties of materials and change with respect to temperature – Materials of constructions used in industry. Important alloys of iron, copper, Aluminium & Nickel. Manufacture; settings of cement. Manufacture & Types of glass. Inorganic Polymers – General properties- Glass transition temperature – Maddrell's salt – Kuroll's salt – polymeric shulpur nitride – silicon rubber – silicon resins.

Unit IV: Photochemistry and Adsorption (9 Hours)

Photochemical reaction – Laws of photochemistry – quantum yield – primary and secondary process – HI decomposition – HBr decomposition – kinetics of hydrogen- bromine reaction - kinetics of hydrogen- chlorine reaction – Photochemical equlibirium - photodimerisation of Anthracene – Photosensitisations – Chemiluminescence – Phosphorescence.

Adsorption - heat of adsorption – factors influencing adsorption-physisorption and chemisorptions- Langmuir's theory of adsorption,-Frendlich's isotherm- Gibbs adsorption isotherm for adsorption from solutions.

Unit V: Group theory **(9 Hours)**

Symmetry elements and operations-properties of a group-Abelian group-cyclic group- point groups of molecules (C_n, C_{nv}, C_{nh}, D_{nh}, D_{nd} and linear molecules)- optical activity and dipole moment on the basis of symmetry.

References

1. Puri B.R., Sharma L.R., Pathania M.S.,Principles of Physical Chemistry, (23rd edition) New Delhi, Shoban Lal, Nagin Chand & Co., (1993).
2. Puri B.R., Sharma L.R., Kalia K.K., Principles of Inorganic Chemistry, (23rd edition) New Delhi, Shoban Lal, Nagin Chand & Co., (1993).
3. Raman K V, Group Theory and its Applications to Chemistry, New Delhi, TATA McGraw Hill Co., (1990).

Sem. I **Hours/Week: 4**
14PCO1201A **Credits: 4**

Core Elective-I

SUPPLY CHAIN MANAGEMENT

Objectives

- To enable the students to be acquaint with various concepts and components of Supply Chain Management.
- To introduce students to the recent developments in Supply Chain Management.

Unit I **(12 hr)**

Introduction: Basic Concept & Philosophy of Supply Chain Management; Essential features, Various flows (cash, value and information), Key Issues in SCM, benefits and case examples.

Unit II **(12 hr)**

Logistics Management: Logistics as part of SCM, Logistics costs, different models, logistics sub-system, inbound and outbound logistics, bullwhip effect in logistics, Distribution and warehousing management.

Unit III **(12 hr)**

Purchasing & Vendor management: Centralized and Decentralized purchasing, functions of purchase department and purchase policies. Use of mathematical model for vendor rating / evaluation, single vendor concept, management of stores, accounting for materials.

Unit IV **(12 hr)**

Inventory Management: Concept, various costs associated with inventory, various EOQ models, buffer stock (trade off between stock out / working capital cost), lead time reduction, re-order point / re-order level fixation, exercises -numerical problem solving, ABC, SDE / VED Analysis, Just-In-Time & Kanban System of Inventory management.

Unit V **(12 hr)**

Recent Issues in SCM : Role of Computer / IT in Supply Chain Management, CRM Vs SCM, Benchmarking- concept, Features and Implementation, Outsourcing-basic concept, Value Addition in SCM-concept of demand chain management.

Text Book

1. Chopra Sunil and Peter Meindl - Supply chain management (Pearson, Latest Ed.)

Books for References

1. Raghuram G. (I.I.M.A.) - Logistics and Supply Chain Management (Macmillan, Latest Ed.)
2. Krishnan Dr.Gopal - Material Management, (Pearson, New Delhi, 5th Ed.)
3. Agarwal D.K. - A Text Book of Logistics and Supply chain management (Macmillan,1st Ed.).
4. Sahay B.S. - Supply Chain Management, (Macmillan, 1st Ed.)
5. Dr.L. Natarajan (2013), Logistics & Supply Chain Management, Margham Publications, Chennai.

Sem. II **Hours/Week: 4**
14PCO2202 **Credits: 4**

Core Elective (WS)

EXIM POLICIES AND PROCEDURES

Objectives

- To make the students to know and apply the documentation formalities related to export - import.
- To acquaint students with the procedures of export - import transactions.

Unit I **(12 hr)**

Documentation Framework: Export import controls and policy; Types and characteristics of documents; Export contract; Processing of an export order - Export Financing Methods and Terms of Payment: Negotiations of export bills; Methods of payment in international trade; Documentary Credit and collection; UCP 500;Pre-Post shipment export credits, Bank guarantees; foreign exchange regulations and procedures.

Unit II **(12 hr)**

Cargo, Credit and Exchange Risks: Marine insurance - need, types and procedure; ECGC schemes for risk coverage, and procedure for filling claims - Quality control and Pre-shipment Inspection Schemes: Process and

Procedures; Excise and customs clearance - Regulations, Procedures and documentations.

Unit III **(12 hr)**

Planning and Methods of Procurement for Exports: Procedure for procurement through imports; Import financing; Customs clearance of import cargo; Managing risks involved in importing -transit risk, Credit risk and exchange risk.

Unit IV **(12 hr)**

Export incentives: Overview of export incentives - EPCG, duty drawbacks, duty exemption schemes, tax incentives; Procedures and documentation.

Unit V **(12 hr)**

Trading Houses: Export and trading houses Schemes -Criteria, Procedures and documentation; Policy and Procedures for EOU/FTZ/EPZ/SEZ units.

Text Book

1. Mahajan, M .I Exports - D o it yourself - Snow White Publications, Mumbai.

Books for references

1. Customs and Excise Law times: Various Issues.
2. Export - Import Policy: Ministry of Commerce, Governmentof India.
3. Hand book of Export ImportProcedures: Ministry ofCommerce, Government of India Vols. I&II.
4. Ram, Paras, Exports: What, Where and How? Anupam Publications, New Delhi.
5. Jain.K.S (2012), Export Import Procedures & Documentation, Margham Publication, Chennai.

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Sem. III
14PCO3110A **Credits: 2**

Self Paced Course-I

ACCOUNTING STANDARDS

Objectives

- To enable the students to learn the nuances of accounting standards
- To enable the students to know the tactics of applying the norms of Accountins Standards in different situations

Unit I **(6 Hr)**

AS 1: Disclosure of Accounting Policies; AS 2:Valuation of Inventories; AS 3: Cash Flow Statements; AS 4: Contingencies and Events occurring after the Balance Sheet Date.

Unit II **(6 Hr)**

AS 5: Net Profit or Loss for the Period, Prior Period Items and Changes in Accounting Policies; AS 6: Depreciation Accounting;AS 7: Construction Contracts (Revised 2002)

Unit III **(6 Hr)**

AS 9: Revenue Recognition; AS 10: Accounting for Fixed Assets; AS 11: The Effects of Changes in Foreign Exchange Rates (Revised 2003).

Unit IV **(6 Hr)**

AS 12: Accounting for Government Grants; AS 13: Accounting for Investments; AS 14: Accounting for Amalgamations; AS 15: Employee benefits AS 16: Borrowing Costs.

Unit V **(6 Hr)**

AS 19: Leases; AS 20: Earnings Per Share; AS 26: Intangible Assets; AS 29: Provisions, Contingent Liabilities and Contingent Assets.

Books for references

1. Dolphy D'souza (11th Edition), Students guide to Indian Accounting standards and Gaap, Snow white Publications.
2. Amitabha Mukherjee (2011), Illustrated guide to Indian Accounting Standards (Ind- ASS), Taxmann Allied Services Pvt Ltd.
3. Young Global Publications (2011), Complete guide on converged Indian Accounting Standards.

Sem. III
14PCO3110B **Credits: 2**

Self Paced Course-II

CUSTOMER RELATIONSHIP MANAGEMENT

Objectives

- To enable the students to learn the concepts and applications of CRM
- To learn the tactics of applying CRM in different practical environment.

Unit I **(6 hr)**

Customer - CRM - CRM technology - component - customer life style - customer interaction. Difference between CRM and eCRM - features of eCRM - Sales Force Automations (SFA) Definition and need of SFA - barriers to successful SFA -functionality, technological aspect of SFA, data synchronization - flexibility and performance, reporting tools.

Unit II **(6 hr)**

Enterprise Marketing Automation (EMA) - Components of EMA, marketing campaign, campaign planning - and management, business analytic tools, EMA components (promotions, events loyalty and retention programs), response management.

Unit III **(6 hr)**

Call Centres - Types of Call Centre - Meaning, customer interaction, the functionality, technological implementation, what is ACD (Automatic Call Distribution), IVR (Interactive Voice Response), CTI (Computer TelephonyIntegration), web enabling the call center, automated intelligent call routing, logging & monitoring.

Unit IV **(6 hr)**

Customer Satisfaction - Meaning - Definition - Importance - Components - Customer Satisfaction models - Customer Satisfaction Practices. Service quality: Meaning - Definition - Types - Dimensions - Gaps - Measurement Scales.

Unit V **(6 hr)**

CRM & Emoloyees - Customer Linkage - Factors effecting Employees' Customers oriented behavoirs - Service failure - Service recovery management - Customer recall management - Customer experience management.

Books for References

1. Jaspreet Kaur Bhasin (2012), Customer Relationship Management, Dreamtech Press.
2. Alok Kumar Rai (2013), Customer Relationship Management - Concepts and cases, PHI Learning Pvt Ltd., J Reinartz, WILRY India edition.
3. Customer Relationship Management by Kristin Anderson and Carol Kerr, TM.

Sem. III

14PCO3110C **Credits: 2**

Self Paced Course-III

ENTREPRENEURIAL DEVELOPMENT

Objectives

- To inculcate a sense of becoming "Job Providers" rather than "Job Seekers" in the students
- To help the students to be proficient with innovative skills and tactics for entrepreneurship.

Unit I **(6 Hr)**

Concepts: Entrepreneurship: Definition - Characteristics of Entrepreneurship -Socio-Economic origins of Entrepreneurship - Environmental factors affecting entrepreneurship - Views of Schumpeter, Walker and Peter Drucker - Barriers to Entrepreneur ship; Role of entrepreneurship in Economic Development; Entrepreneur: Definition and Meaning - Entrepreneur Vs Enterprise, Entrepreneur Vs Manager -Qualities of entrepreneur - Types of entrepreneur - Traits of a successful entrepreneur - Functions of Entrepreneur - Motivating factors: Entrepreneurial ambitions - Compelling factors - Facilitating factors.

Unit II **(6 Hr)**

Establishing entrepreneurial systems: Search for business idea, Sources of ideas, Idea processing, Selection of Idea - Project identification and Classification- Significance of project formula tion Marketing Channel.

Unit III **(6 Hr)**

Incentives and Subsidies: Meaning - Need - Schemes of Incentives - Incentives for development of Industries in Backward areas - Subsidies and Incentives in Tamil Nadu Entrepreneurial Development Programmes: Objectives - Phases - Contents.

Unit IV **(6 Hr)**

Institutions assisting entrepreneurs: DIC - SIDO - NSIC - SSIC - SIDCO - SISIs -TIDCOs - SIPCOT - TIIC - ITCOT - SFC - SIDCs.

Unit V **(6 Hr)**

Industrial Estates - Special Economic Zones - FDI - Green Field Investment.

Text Book

1. C.B.Gupta., N.P.Srinivasan, (2008), Entrepreneurial Development, Sultan Chand & Sons, New Delhi.

Books for References

1. Dr. V. Sujatha & Co, (2000), Entrepreneurial Development, Cauvery Publications, Tiruchirappalli.
2. Saravanavel. P., (2005), Entrepreneurial Development, Principles, Policies and Programmes, Ess Pee Kay Publishing House, Tanjore.

Sem. III
14PCO3110F **Credits: 2**

Self Paced Course-F

COMPETITIVE EXAMINATION FOR COMMERCE

Objectives

- To expose the students to important topics in Commerce and Economics.
- To enable the students to learn basics of GK, Numerical abilities and Reasonning abilities.

Unit I **(6 hr)**

Banking functions- types of accounts- cheques- cards-RBI functions - role -E-banking and services-types of shares and debentures- Role of SEBI - NSE -Insurance - types-Important provisions of Income tax- calculation under sec 80c.

Unit II **(6 hr)**

Economic system -Industrial Policies - taxation policy-monetary and fiscal policy- inflation -deflation-business cycle- balance of trade - balance of payment- Market structure and price decisions- perfect competition-monopoly-oligopoly-monopolistic competition-types of demand and supply.

Unit III **(6 hr)**

General knowledge- popular leaders- Union budgets- five year plans- -sports-computer -history-basic concepts- parts of a computer and its function-short cut keys -Ms word Ms excel- Electronics data interchange (EDI).

Unit IV **(6 hr)**

Numerical ability- BODMAS- ratio and percentage- calculation of selling price- marked price- profit & loss-simple interest- compound interest-basic logarithm-HCF-LCM-GCD-time-speed and distance-Mensuration.

Unit V **(6 hr)**

Reasoning ability-Direction- blood relation- English comprehensive-spot the error- articles-preposition-essay writing.

Books for References

1. Sanjay Kumar (2011), Objective Commerce, Ramesh Publishing House
2. Dr. Vineet Kaushik 2013 UGC NET/SET (JRF & LS) COMMERCE Paper II & III Arihant Publications
3. Purushottam Kumar (2013), General Knowedge, G.K.Publications
4. S.K. Singh (2011), Reasoning & Numerical Ability for GATE, Cengage Learning India Pvt. Ltd.

Sem. III **Hours/Week: 4**
14PCO3203 **Credits: 4**

Core Elective (WS)

PORTFOLIO MANAGEMENT

Objectives

- To provide knowledge on the various investment avenues that benefits the individual and nation.
- To introduce the students to the application of various tools and techniques of financial risks and investments management.

Unit I **(12 Hr)**

Introduction: Investment- Features of Investment Program- Risk of Investment- Spectrum of Investment- Equity Shares- Fixed Income Securities- Mutual Fund Scheme- Deposits- Tax sheltered Savings Scheme- Life Insurance-Real Estate- Precious objects.

Unit II **(12 Hr)**

Sources of Financial Risk: Credit . market, default risk, foreign exchange risk interest rate risk - purchasing power risk etc.; Systematic and non-systematic risk.

Unit III **(12 Hr)**

Fundamental analysis- Influence of the economy- Economy Vs Industry and Company- Industry analysis- Company analysis- Guidelines for Investment-How to pick up growth Shares-NSE, BSE, Dow Jones Index and OTCEI. Technical analysis of the market- Basic tenets- Dow theory- Major trends- Principles of technical analysis.

Unit IV **(12 Hr)**

Options: types of options; option trading; option markets-exchange traded options, over-the-counter options, quotes, trading, margins, clearing, regulation and taxation; Warrants and convertibles. Future: Hedgers and speculators; Future contracts; Future markers-clearing house, margins trading future positions and taxation; Future prices and spot prices; Forward prices vs. Future prices; Future vs. options.

Unit V **(12 Hr)**

Portfolio Management - Portfolio Theory Portfolio Criteria - Efficient Set- Portfolio Selection and Diversification -The Shape and the Risk Function (including CAPM Model Technical Analysis, Random Walk and Martingale Model) -Portfolio Objective -Size of Portfolio - Selection Basis and Readjustment - Timings of Disinvestment.

Text Book

1. V.K. Bhalla (2005), Investment Management (Security analysis and Portfolio Management) S. Chand & Ccompany Ltd, New Delhi.

Books for references

1. V. Aavadhani(1999)- Investment & Securities markets in India, Himalaya Publishing House, New Delhi. (2001)
2. Donald E Fischer & Ronald J Jordan, Security analysis and Portfolio Management, Prentice Hall of India Pvt limited, New Delhi, (2001).
3. P. Jhabak (2012), Security analysis and portfolio management, Himalaya publication house Pvt. Ltd., New Delhi.
4. L Natarajan (2013-14), Portfolio Management, Margham publications, Chennai.

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Sem. III **Hours/Week: 4**
14PCO3401 **Credits: 4**

IDC (BS)

BASICS OF TAXATION

Objectives

- To enable the students to understand the basics of Income Tax.
- To expose students to the computation of taxable incomes of individuals under various heads.

Unit I **(10 Hr)**

Concept of income tax- Previous Year, Assessment Year, Persons, Assessee,- Residual status and Incidence of Tax.

Unit II **(15 Hr)**

Salary - Allowances - HRA-Educational& Hostel Allowance- Valuationof rent free accommodation-Deductions U/Sec 16- Computation of Taxable salary.

Unit III **(12 Hr)**

Meaning of GAV and NAV - Types of House Property - Deduction in u/s 24 - Computation of Income from House Property.

Unit IV **(12 Hr)**

Business Income - inadmissible expenses- allowable expenses - Computation of Income from profession.

Unit V **(11 Hr)**

Capital Gain - Cost of Acquisitions - Cos of improvement - Cost-Long Term and Short Term Capital Gain -Computation of Capital Gain - Computation of Income from other Sources.

Text book

1. Reddy TS and Hari Prasad Reddy Y, "Income Tax Theory, Law and Practices", Margham Publications, Chennai.

Books for references

1. Dr.Vinod K Singhania, "Students Guide to Income Tax", Taxmann Publications Pvt. Ltd., New Delhi, (Latest Edition).
2. Bagavathi Prasad, Direct Taxes, WishwaPrakashan, New Delhi, (Latest Edition).
3. Mariyappa, Income Tax, Himalaya Publication House Pvt. Ltd, New Delhi.

Theory 20%, Problems:80%

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Sem. IV **Hours/Week: 6**
14UBC430404 **Credits: 5**

Allied:
ACCOUNTS-II

Objectives

- To impart basic knowledge of cost and management accounting
- To help the student to know the application of them in different situations.

Unit I **(18 hours)**

Preparation of cost sheet- tender quotation. (18 hours)

Unit II **(18 hours)**

Cash flow management- meaning- preparation of cash flow statement.

Unit III **(18 hours)**

Working capital management- meaning- components- Calculation.

Unit IV **(18 hours)**

Marginal costing - Marginal cost- Contribution -PV Ratio - BEP - Margin of safety -CVP-decision making (simple).

Unit V **(18 hours)**

Budgeting control- preparation of cash budget- sales budget- production budget- production cost budget- flexible budget.(18 hours)

Text book:

1. Reddy and murthy, Cost Accounting (latest Ed.,),Margham Publications, Chennai(Unit I).
2. Reddy and murthy, Management Accounting (latest Ed.,), Margham Publications, Chennai.(Unit II, III, IV & V)

BOOKS FOR REFERENCES

1. S.N. Maheswari, (2007), Cost Accounting, S.Chand& Co, New Delhi.
2. Jain & Narang, (2006), Cost Accounting Principles and Practice, Kalyani Publishers, New Delhi.

Sem. VI **Hours/Week: 4**
14UCO630303 **Credits: 4**

Elective (WS)
SECRETARIAL PRACTICES

Objectives

- To enable the students to understand the principles and procedures of Company law relevant to the jobs of company secretaries.
- To enable them to acquire skills needed for secretarial practices in corporate form of organisations.

Unit I **(12 hours)**

Introduction to company - company Formation Procedure for formation Registration, Re-registration & Consequences of Non- Registration, Company - Meaning, Definition, Features & Types ,Conversion of Public & Private company & Reconversion of Private & Public Company. Filing of Periodical Returns & Penalties therein. Procedure for getting compliance certificate. Specimens.

Unit II **(12 hours)**

Company Secretary - Who is a Secretary? Importance - Types - Positions - Qualities - Qualifications - Appointments and dismissals - Powers - Rights - Duties - Liabilities. Role of Company Secretary as a Statutory Officer, as a coordinator and as a Administrative Officer.

Unit III **(12 hours)**

Appointment of Director - Removal of Director - Rights - Liabilities. Law Governing Meetings - Requisites of valid meeting - Chairman of a meeting - Appointments - Duties and Powers - Notice - Agenda - Quorum - Motion - Resolution - Methods of Voting - Minutes.

Unit IV **(12 hours)**

Kinds of Company Meetings - Board of Directors meetings - Statuary meetings - Annual General meeting - Extraordinary General meeting - Duties of a Company secretary relating to the meetings.

Unit V **(12 hours)**

Drafting of Correspondence - Relating to the meetings - Notices - Agenda - Chairman's speech - Writing of minutes.

TEXT BOOKS

1. Kapoor, N.D, (Latest), 'Elements of Company Law', Sultan Chand & Sons, New Delhi.
2. Kuchhal, M.C, (Latest), 'Secretarial Practice' Vikas publishing house Pvt. Ltd., New Delhi.

BOOKS FOR REFERENCES

1. Prasanta K. Gosh and Balachandran, V, (Latest), Company Law and Practice - I &II, Sultan Chand & Sons, New Delhi.
2. Autar Singh, (Latest), 'Company Law', Eastern book Co., Lucknow.
3. Ashok K. Bagrial, (Latest), 'Company Law', Vikas publishing house Pvt. Ltd., New Delhi.
4. Bansal, CL, (2005), Corporate Governance-Law, Practice, procedures with case studies, Taxmann Allied services (P) Ltd.

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Sem. VI **Hours/Week: 2**
14UCO640602 **Credits: 2**

Skill Based Elective:
PRACTICAL ADVERTISING

Objectives

- To give the students the basic knowledge of different forms, tools and concepts of advertising
- To introduce the students to the modern methods and avenues of advertising.

Unit I **(6 hours)**

Advertising - Meaning - Definitions - Origin - Growth - Development - Objectives - Nature - Scope - Functions - Primary and secondary functions - AIDA model.

Unit II **(6 hours)**

Advertising - Role - Importance - Benefits - Demerits - Legal regulations - Limitations - Truth in advertising - Ethics in advertising - Role of Advertising standards Council of India.

Unit III **(6 hours)**

Media selection - Factors influencing media selection - different types of Media - Press - Television - Radio - FM Radio - Internet - Merits - Demerits.

Unit IV **(6 hours)**

Advertising copy - Meaning - Essentials of a good advertising copy - Types of advertising copy - components of advertising copy.

Unit V **(6 hours)**

Advertising appeals - meaning - Definition - Functions - Classifications - Principals.

TEXT BOOKS

1. Mahendra Mohan, (2006) Advertising Management, Tata McGrew Hill Publishing Co. Ltd., New Delhi. (Unit - 1 to 3)
2. Daver, (1980) 'Salesmanship & Advertising' Progressive Publishers Bombay.(Unit - 4 to 5)

BOOKS FOR REFERENCES

1. Pillai & Bhagavathi, (2000) 'Salesmanship', S. Chand & Co. Ltd., New Delhi.
2. P. Saravanavel (2013), Advertiesment & Salesmanship, Margham publication, Chennai.

Sem. IV **Hours/Week: 6**
14UMA430404B **Credits: 5**

Allied:

ACCOUNTS-II

Objectives:-

- To impart basic knowledge of cost and management accounting
- To help the student to know the application of them in different situations.

Unit-I

Preparation of cost sheet- tender quotation. (18 hours)

Unit-II

Cash flow management- meaning- preparation of cash flow statement. (18 hours)

Unit-III

Working capital management- meaning- components- Calculation.(18 hours)

Unit-IV

Marginal costing – Marginal cost- Contribution –PV Ratio – BEP – Margin of safety –CVP-decision making (simple).(18hours)

Unit-V

Budgeting control- preparation of cash budget- sales budget- production budget- production cost budget- flexible budget.(18 hours)

Text book:

1. Reddy and murthy, Cost Accounting (latest Ed.,),Margham Publications, Chennai(Unit-I).
2. Reddy and murthy, Management Accounting (latest Ed.,), Margham Publications, Chennai.(Unit-II, III, IV & V)

BOOKS FOR REFERENCES

1. S.N. Maheswari, (2007), Cost Accounting, S.Chand& Co, New Delhi.
2. Jain & Narang, (2006), Cost Accounting Principles and Practice, Kalyani Publishers, New Delhi.

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Sem. IV **Hours/Week: 6**
14UST430404B **Credits: 5**

Allied-III:
ACCOUNTS-II

Objectives:-

- To impart basic knowledge of cost and management accounting
- To help the student to know the application of them in different situations.

Unit I

Preparation of cost sheet- tender quotation. (18 hours)

Unit II

Cash flow management- meaning- preparation of cash flow statement. (18 hours)

Unit III

Working capital management- meaning- components- Calculation.(18 hours)

Unit IV

Marginal costing – Marginal cost- Contribution –PV Ratio – BEP – Margin of safety –CVP-decision making (simple).(18hours)

Unit V

Budgeting control- preparation of cash budget- sales budget- production budget- production cost budget- flexible budget.(18 hours)

Text book:

1. Reddy and murthy, Cost Accounting (latest Ed.,),Margham Publications, Chennai(Unit I).
2. Reddy and murthy, Management Accounting (latest Ed.,), Margham Publications, Chennai.(Unit II, III, IV & V)

BOOKS FOR REFERENCES

1. S.N. Maheswari, (2007), Cost Accounting, S.Chand& Co, New Delhi.
2. Jain & Narang, (2006), Cost Accounting Principles and Practice, Kalyani Publishers, New Delhi.

Sem. I **Hours/Week: 3**
14PCA1107 **Credits: 2**

Software Lab-II

HTML and DHTML

1. Designing and formatting the contents of a webpage using basic tags
2. Creating a webpage for displaying the Time-table for current semester with 'Table' tags
3. Designing a webpage using Frame tag
4. Designing an application form for opening a SB account using 'form' tag
5. Creating a webpage using audio and video tags

JavaScript

5. Data validation using JavaScript
6. Writing a simple JavaScript with Conditional and Branching constructs
7. Adding interactivity to a web page (Events)
8. Working with Dialog boxes
9. Adding Scripts to Forms

Sem. I
14PCA1108 **Credits: 2**

Self Paced Learning:
FUNDAMENTALS OF IT

Objectives

* To impart the knowledge about various facets of Information Technology.

Unit - I

Information Technology - Meaning - Need - Components Role of IT - IT in manufacturing, IT in mobile computing, IT in public sector, IT in defense, IT in media, IT in publication, IT and internet. Emerging trends in IT - E Commerce, IT and supply chain management, IT and SIS, Electronic Data Interchange (EDI).

Unit - II

Emerging Trends of Information Technology: Mobile Communication, Bluetooth, Global Positioning System (GPS), Infrared Communication, Smart Card, Blue Laser Disc, Nano Technology, DNA Computing, Quantum Computer, Holographic Memory.

Unit - III

Internet: Introduction, Relays, Repeaters, Bridges, Routers, Gateways. Internetworking: How networks differ, concatenated virtual circuits, connectionless internetworking, tunneling, internetwork Routing, fragmentation, Firewalls, internet architecture.

Unit - IV

Multimedia: Definition - Building blocks of multimedia - Multimedia System - Applications - Virtual Reality. Internet Tools: Introduction - Web Browser - Electronic Mail - Search Engines - Instant Messaging.

Unit - V

Computer in Business: Computers in Office Automation - Computers in Transaction Processing - Computers as Information Tools for Management Control - Computers in Engineering - Business on the Internet. Software Packages: Introduction to Word Processing - Microsoft Word - Desktop Publishing - Database Management Systems- Electronic Spreadsheets.

Books for Study

Unit I, II, III, IV

1. ITL Education Solution Ltd, "Introduction to Information Technology", Dorling, Kindersley (India) Pvt. Ltd, New Delhi.

Unit V: CH 10 and CH 13

2. Leon, "Introduction to computers",Vikas Publishing House Pvt. Ltd., NewDelhi, 2006.

Books for Reference

1. Efraim Turban et al, "Introduction to Information Technology", Wiley India Pvt. Ltd., New Delhi.
2. Srinivasa Vallaban SV, (2005), Computers in Business, Sultan Chand and Sons, New Delhi.

Sem. I **Hours/Week: 2**
14PCA1109 **Credits: 2**

INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

Objectives

* To enable the students to have a basic knowledge of information communication technology and its applications.

Unit I

Fundamentals: Fundamentals of Information and Communication Technology (ICT) - Importance of ICT - Applications of ICT. (6)

Unit II

Internet groups: Creations and access of news groups - Community Networks - Social forum - Blogs. (6)

Unit III

Internet Applications and Services: Online payments (EB, Phone) - Online reservation (Train, Bus, Air-Tickets) - Online bank transaction (Net Banking). (6)

Unit IV

Internet Applications and Services: Online Applications (PAN, Passport) - Online tests - Social Networking websites - Blog management. (6)

Unit V

Categories of web sites: Government websites - Public sector websites - Education institution websites - Scientific & Research websites. (6)

Books for Study

1. K.L. James, "The Internet: a User's Guide", PHI Learning Pvt. Ltd., 2010.

Web References

1. www.india.gov.in
2. www.irctc.co.in/
3. www.onlinesbi.com
4. https://tin.tin.nsdl.com/pan/
5. www.passportindia.gov.in/AppOnlineProject/welcomeLink
6. www.blogger.com

Sem. II **Hours/Week: 4**
14PCA2401 **Credits: 4**

IDC-1 (WS): LAMP

Objectives

* The objective of the paper is to enable the students to install and configure as well as to handle the components of the LAMP (Linux, Apache, MySQL, and PHP) infrastructure in an efficient way.

Unit - I **(12)**

Linux: Introduction - Download and Install - Decisions, Decisions - Linux Partition Sizes - Accounts - Security - Basic UNIX: Shell - Owner, Groups, Permissions, Ownership - Processes - PATH and Environment - Commands-Basic File System Essentials - Useful Programs.

Unit - II **(12)**

Apache Web server: Starting and Stopping and Restarting Apache-Configuration - Securing Apache - Create the Web Site-Apache Log Files.

Unit - III **(12)**

My SQL: Commands - Database Independent Interface - Tables - Loading and Dumping Database.

Unit - IV **(12)**

PHP: Embedding PHP into HTML -Configuration - Language Syntax: Variables - Data Types - Web variables - Operators - Flow Control Constructs - Writing PHP Papers.

Unit - V **(12)**

Built in PHP function - Important Functions - Array Functions - String Functions - Other Functions - PHP and MySQL: MySQL Functions.

Books for Study

1. James Lee and Brent Lee "Open Source Development with LAMP - Using Linux , Apache, My SQL ,Perl and PHP", Pearson Education , 2009.

Books for Reference

1. JsonGerner, Elizabeth Naramore , Morgan Owens and Matt Warden , "Professional LAMP - Using Linux , Apache, My SQL and PHP5Web development", Wiley Publisher, 2006.

Sem. III **Hours/Week: 4**
14PCA3201B **Credits: 4**

Core Elective (WS):

DATA MINING

Objectives

* To understand the basic concepts, tasks, methods and techniques in data mining.

Unit -I **(12)**

Introduction: Data Mining - Data Mining Functionalities - Classification of Data Mining Systems - Data Mining Task Primitives - Integration of a Data Mining System with a Database or Data Warehouse System - Major Issues in Data Mining.

Unit-II **(12)**

Data Preprocessing: Descriptive Data Summarization - Data Cleaning - Data Integration and Transformation - Data Reduction - Data Discretization and Concept Hierarchy Generation.

Unit-III **(12)**

Mining Frequent Patterns, Associations, and Correlations: Basic Concepts and a Road Map - Efficient and Scalable Frequent Itemset Mining Methods - Mining Various Kinds of Association Rules - From Association Mining to Correlation Analysis.

Unit-IV **(12)**

Classification and Prediction: Issues Regarding Classification and Prediction - Classification by Decision Tree Induction - Bayesian Classification - Rule-Based Classification - Classification by Backpropagation - Support Vector Machines.

Unit - V **(12)**

Cluster Analysis: Cluster Analysis - Types of Data in Cluster Analysis - A Categorization of Major Clustering Methods - Partitioning Methods - Hierarchical Methods - Density-Based Methods - Grid-Based Methods - Model-Based Clustering Methods.

Book for Study

1. Han. J, Kamber. M, “Data Mining: Concepts and Techniques”, Morgan Kaufmann Publishers, 2nd Edition, 2006.

Books for Reference

1. Michael J.A. Berry, Gordon S. Linoff, “Data Mining Techniques”, John Wiley & Sons, 1997.
2. David J. Hand, Heikki Mannila, Padhraic Smyth, “Principles of Data Mining”, Massachusetts Institute of Technology, 2001.

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Sem. III **Hours/Week: 4**
14PCA3402 **Credits: 4**

IDC (BS):
WEB DESIGN

Objectives

* To enable the students to have a basic knowledge about the Internet and its principles.

Unit I **(12)**

Networking Concepts: what is INTERNET? - History - Applications - Users - Protocols - Host Machines and Host Names - Internet Architecture and Packet Switching - Who is in charge? - Client Server Model - Band width and Asynchronous Communication. Connection : Dial-up Access - Direct and Dedicated Connections - shell or TCT/ IP accounts - Domains and Addresses - Domain name system - IP addresses.

Unit II **(12)**

Facilities: E-Mail - WWW - FTP - TELNET - HTTP - USENET - Search Engines.

Unit III **(12)**

HTML: Tags - Document Layout - Comments - Headings - Paragraphs - Breaks - Texts - Lists - Special Characters - Links - Images - Form - Tables - Frames.

Unit IV **(12)**

VB Script: Language structure - Control Structure - Procedures and Functions - Error handling.

Unit V **(12)**

VB Script: Input & Output - Data Validation - Integration with Forms - ActiveX Control & Scripting.

Books FOR STDUY

Unit I,II

1. Wendy G.Lehnert, “Internet 101 - a beginners guide to the internet and the world wide web”, addition wesley, 1999.

Unit III

2. CIS terms school of computing - Jaipur, “INERNET - An Introduction”, Tata McGraw Hill publishing company limited, New Delhi - 1999.

Unit IV, V

3. Christopher J.Goddard, Mark White, “Mastering VBScript”, Galgotia publications, New Delhi, 1998.

Book for Reference

1. Chuck Musciano & Bill Kennedy, “HTML - The Definitive Guide”, Shroff Publishers & Distributors Pvt. Ltd., Calcutta - 1999.

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Sem. IV **Hours/Week: 4**
14PCA3202C **Credits: 4**

Core Elective (WS):

INFORMATION STORAGE AND MANAGEMENT

Objectives

* To impart the basic and advanced concepts in Information storage and Management with various storage models and systems.

Unit-I: Introduction to Information Storage and Management

Information Storage: Data - Types of Data - Information - Storage - Evolution of Storage Technology and Architecture - Data Center Infrastructure - Core Element - Key Requirement for Data Center Elements - Managing Storage Infrastructure - Key Challenges in Managing Information- Information Lifecycle: Information Life Cycle Management - ILMImplementation - ILM Benefits - Direct Attached Storage and Introduction to Scsi: Types of DAS - Internal DAS, External DAS - DAS Benefits and Limitation - Disk Drive Interfaces - Ide/Ata, Sata,IDE/ATA, SATA Parallel SCSI - Introduction to Parallel SCSI: Evolution of SCSI - SCSI Interface - SCSI-3 Architecture - Parallel SCSI Addressing - SCSI Command Model - CDB Structure - Operation Code - Control Field - Status.

Unit-II: Storage System Environment and RAID

Components of Storage System Environment: Host - Connectivity - Storage - Disk Drive Components - Platter, Spindle, Read/Write Head, Actuator Arm Assembly, Controller, Physical Disk Structure, Zoned Bit Recording, Logical Block Addressing - Disk Drive Performance: Disk Service Time - Logical Components of the Host - Operating System - Device Driver - Volume Manager - File System - Application- Data Protection: RAID: Implementation of RAID - Software RAID - Hardware RAID - RAID Array Components - RAID Levels - Striping - Mirroring - Parity - RAID 0 - RAID 1 - Nested RAID- RAID 3 - RAID 4 - RAID 5 - RAID6 - RAID Comparison - RAID Impact on Disk Performance: Application IOPS and RAID Configuration - Hot Spares.

Unit-III: Intelligent Storage System and Storage Area Network

Components Of An Intelligent Storage System: Front End - Cache - Back End - Physical Disk - Intelligent Storage Array - High End Storage Systems - Midrange Storage System - Storage Area Network: Fibre Channel: Overview - The SAN and its Evolution - Components of SAN - Node Ports - Cabling - Interconnect Devices - Storage Arrays - SAN Management Software - FC Connectivity - Point to Point - Fibre Channel Arbitrated Loop - Fibre Channel

Switched Fabric - Fibre Channel Ports - Fibre Channel Architecture : Fibre Channel Protocol Stack - Fibre Channel Addressing - FC Frame - Structure and Organization of FC Data - Flow Control - Classes of Service - Zoning - Fibre Channel Login Types - FC Topology - Core-Edge Fabric - Mesh Topology.

Unit-IV: Network Attached Storage and Content Addressed Scheme

Network Attached Storage: General Purpose Servers Vs NAS Devices - Benefits of NAS - NAS File I/O - File System And Remote File Sharing - Accessing a File System - File Sharing - Components of NAS - Nas Implementation: Integrated NAS - Gateway NAS - Integrated NAS Connectivity - Gateway NAS Connectivity - NAS File Sharing Protocols - NFS, CIFS - NAS

I/O Operations - Hosting and Accessing Files on NAS - Factors Affecting NAS Performance and Availability - Content Addressed Storage: Fixed Contents and Archives - Types of Archives - Features and Benefits of CAS - CAS Architecture - Object Storage and Retrieval in CAS - CAS Example - Healthcare Solution : Storing Patient Studies.

Unit-V: Storage Virtualization, Backup and Recovery

Forms of Virtualization: Memory Virtualization - Network Virtualization - Server Virtualization - Storage Virtualization - SNIA Storage Virtualization Taxonomy - Storage Virtualization Configuration - Storage Virtualization Challenges - Scalability - Functionality - Manageability - Support - Types Of Storage Virtualization: Types of Storage Virtualization - Block-Level Storage Virtualization - File Level Virtualization - Backup And Recovery: Backup Process - Disaster Recovery - Operational Back Up - Archival - Backup Consideration - Backup Granularity - Recovery Considerations - Backup Methods - Backup Process - Backup And Restore Operations - Backup Topologies - Serverless Backup - Backup in NAS Environment - Backup Technologies - Backup to Tape - Physical Tape Library - Backup to Disk - Virtual Tape Library.

Book for Study

1. EMC Education services, “Information Storage and Management Storing”, Wiley India Edition, ISBN:9788126521470.

Book for Reference

1. G. Somasundaram and Alok Shrivatsava, “Information Storage and Management: Storing, Managing, and Protecting Digital Information”, Wiley, 2009.

Sem. V **Hours/Week: 2**
14PCA5132 **Credits: 2**

MANAGERIAL SKILLS

Objectives

* The learning objective of this paper is to enable the students to learn the art of getting things done in the modern business world by learning topics like lateral thinking, decision making, balancing work and life, corporate social responsibility, and work ethics.

Unit-I : THINKING STRATEGIES (6)

Strategic thinking - meaning - questions - thinks included in Strategic thinking - Process consideration in Strategic thinking - Strategic thinking competencies - importance of Strategic thinking - characteristics of Strategic Thinkers - Points to be kept in mind in Strategic thinking.

Lateral Thinking - meaning - why Lateral Thinking - when to use Lateral Thinking - Benefits of Lateral Thinking - Techniques used in Lateral Thinking - Who needs Lateral Thinking - How to use Lateral Thinking? - Conventional Vs Lateral Leaders - Questions asked by Lateral Leaders - becoming a Lateral leader.

Unit-II : INTERPERSONAL STRATEGIES (6)

Conflict Resolution - meaning - points to be understood before studying conflict resolution - sources of conflict - common reactions to conflict - role of perception in conflict - steps for Conflict Resolution - Conflict handling matrix - Functional and Dysfunctional outcome of conflict.

Negotiation skills - process - styles - outcome - principles involved - negotiation model - being a negotiator - qualities of negotiator.

Unit-III : IMPACT OF RESISTANCE (6)

Reasons for Resistance - Types of people in facing changes - introducing change. Facing challenges - meaning - importance - path to facing challenges - benefits of facing challenges.

Unit-IV : ACTION BASED STRATEGIES (6)

Risk taking - meaning - factors determining Risk Taking - Risk Management - users of Risk Management - Steps in Risk Management.

Effective decision making - meaning - approaches - methods - steps - Decision making at the work place.

Unit-V : BEHAVIOURAL STRATEGIES (6)

Motivation and Staying motivated - meaning - finding reason for being motivated - staying motivated at work place - staying motivated in negative work environment - staying motivated during crisis

Balancing work and life - meaning - work satisfaction - gender differences - responsibility of the employers and employees - ways of balancing work and life - handling professional and personal demands - organizing your desk

Books for Study

1. Alex, K. “Managerial Skills”, S.Chand & Co Ltd., New Delhi.

Books for Reference

1. Meena, K. and Ayothi, V. “A book on development of Soft Skills”.
2. Daniel Goleman, “Emotional Quotient”.
3. Norman Vincent Peale, “Power of the Plus factor”.
4. Stephen Covey, “The Seven Habits of Highly Effective People”.

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Sem. V **Hours/Week: 4**
14PCA5203B **Credits: 4**

Core Elective (WS):

CLOUD COMPUTING

Objectives

* To impart Knowledge on Cloud Computing, Management and Governance of Cloud-Based Business Operations.

Unit I **(12)**

Cloud Computing: Introduction, Cloud types, Uses of Cloud, Scalability and Virtualization; Software as a Service (SaaS): Concepts, Multitenant Nature of SaaS Solutions, OpenSaaS Solutions, and Service-Oriented Architecture (SOA); Platform as a Service (PaaS): IT Evolution Leading to the Cloud, Benefits and Disadvantages of PaaS Solutions. Infrastructure as a Service (IaaS): Understanding IaaS, Improving Performance through Load Balancing, System and Storage Redundancy, Utilizing Cloud-Based NAS Devices, Advantages and Server types of IaaS Solutions.

Unit II **(12)**

Identity as a Service (IDaaS): Understanding Single Sign-On and OpenID, Mobile ID Management; Data Storage in the Cloud: Evolution of N/W Storage, Cloud-Based Data Storage - Introduction, Advantages and Disadvantages, the Fear of Cloud-Based Data, and Backup Systems, File System, Industry-Specific Cloud-Based Data storage, Cloud-Based Database Solutions and Block Storage; Virtualization: Introduction, History, Leveraging Blade Server, Server & Desktop Virtualization, Desktop Solution on Demand, Virtual N/W, Data Storage Virtualization and Need for Virtualization.

Unit III **(12)**

Securing the Cloud: Security Advantages of Cloud-Based Solutions, Introduction of Business Continuity and Disaster Recovery; Disaster Recovery and Business Continuity and the Cloud: Understanding the Threats, Service Level Agreements (SLA), Risk Mitigation, Disaster Recovery Plan Template; Service Oriented Architecture (SOA): Understanding SOA, Web Services Vs Web pages, Web Service Performance, Web Service and Reuse, Scaling Web Services, Web Service and Loose Coupling, Web Service as a Black Box, Web Service Interoperability, Governing Web Service.

Unit IV **(12)**

Managing the Cloud: Knowing SLA, Ensuring and Auditing System Backups, System's Data Flow, Vendor Lock-In, Provider's Security Policies and Procedures, Monitoring Capacity Planning, Scaling Capabilities and Audit-Log Use, Solution Testing and Validation; Migrating to the Cloud: System Goals and Requirements, Protecting Existing Data, Knowing Application's Current Characteristics, Considering Vendor Lock-In, Defining Training Requirements, Budget Factors, IT Governance Issues, Cloud Bursting; Mobile Cloud Computing: Evolution, Mobile Cloud Eco-System, The Mobile Players, Mobile Deployment Considerations.

Unit V **(12)**

Governing the Cloud: Understanding Corporate Governance, Extending Governance to IT, Cloud Computing Governance; Evaluating the Cloud's Business Impact and Economics: Business Economics 101, Moor's Law and the Cloud, Understanding Right-Sizing, Defining a Large Data Centre, Economic Key Performance Indicators, Marketing the Cloud; Designing Cloud-Based Solutions: Revisit the System Requirements, Give-and-Take Process.

Booksfor Study

1. Kris Jamsa, "Cloud Computing" Jones and Baretlett Learnig, 2013.

Books for Reference

1. Barrie Sosinsky, "Cloud Computing Bible, " Wiley India Pvt. Ltd. 2012
2. George Reese, "Cloud Application Architectures", Shroff/O' Reilly, 2009.

Sem. V **Hours/Week: 4**
14PCA5203C **Credits: 4**

Core Elective (WS):

CYBER CRIMES AND CYBER LAWS

Objectives

* To impart the awareness and knowledge on Cyber Crimes and various cyber laws.

Unit I **(12)**

Introduction to Cyber Law: Evolution of Computer Technology - Emergence of Cyber space. Cyber Jurisprudence - Jurisprudence and law - Doctrinal approach - Consensual approach - Real Approach - Cyber Ethics - Cyber Jurisdiction - Civil and criminal jurisdictions, Cyberspace- Web space - Web hosting and web Development agreement - Legal and Technological Significance of domain Names - Internet as a tool for global access.

Unit II **(12)**

Information technology Act Overview of IT Act 2000: Amendments and Limitations of IT Act - Digital Signatures - Electronic Governance - Legal Recognition of Electronic Records - Legal Recognition of Digital Signature - Certifying Authorities - Cyber Crime and Offences - Network Service Providers Liability - Cyber Regulations Appellate Tribunal - Penalties and Adjudication.

Unit III **(12)**

Cyber law and related Legislation: Patent Law - Trademark Law - Copyright, Software - Copyright or Patented - Domain Names and Copyright disputes - Electronic Data Base and its Protection - IT Act and Civil Procedure Code - IT Act and Criminal Procedural Code.

Unit IV **(12)**

Cyber law and related Legislation: Relevant Sections of Indian Evidence Act - Relevant Sections of Bankers Book Evidence Act - Relevant Sections of Indian Penal Code - Relevant Sections of Reserve Bank of India Act - Law Relating To Employees And Internet - Alternative Dispute Resolution - Online Dispute Resolution (ODR).

Unit V **(12)**

Electronic Business and legal issues: Evolution and development in E-commerce- paper vs paperless contracts. E-Commerce models- B2B - B2C - E

security. Application area: business - taxation - electronic payments - supply chain - EDI - E-markets - Emerging Trends.

Books for Study

Unit I,II,III,IV

1. Krishna Kumar “Cyber Laws: Intellectual property & E Commerce Security”, Dominant Publisher and Distributors

Unit V

2. NIIT, “Information Security: Policies and Implementation Issues”, PHI Learning, 2004.

Books for Reference

1. NIIT, “Information Security An Overview”.
2. Marine R.C “Cyber Crime Impact in the new millennium”, Auther press.

Sem. III **Hours/Week: 4**
14SCS3103 **Credits: 3**

DESIGN AND ANALYSIS OF ALGORITHMS

Objectives

- To impart the students the knowledge of design and analysis of algorithms this is the core of computer science.
- To give importance to find the complexity (order) of algorithms.

Unit I: **(12)**

Introduction- Algorithm - Algorithm specification: Pseudocode Conventions, Recursive algorithms - Performance analysis: Space Complexity, Time Complexity, Asymptotic Notation, Practical Complexities.

Unit II: **(12)**

Linear data structures: Concepts of non-primitive data structures - Storage structure for arrays - Stacks - Operations on stacks - Queues - Priority queues.

Unit III: **(12)**

Linked linear lists - Operations on linked linear lists - Circularly linked lists - Doubly linked linear lists - Non-linear data structure: Trees - Binary trees - Operations on binary trees - Storage representation and manipulations of binary trees.

Unit IV: **(12)**

Divide and conquer - General method - Binary search - Finding the maximum and minimum in a set of items - Merge sort - Quick sort - Selection sort. Basic Traversal and Search Techniques for graphs: Breadth First Search - Depth First Search.

Unit V: **(12)**

Backtracking - The 8-Queens problem - Algebraic problems - The general method - Evaluation and interpolation - Horner's rule - Lagrange interpolation - Newtonian interpolation.

Books for Study

Unit I,IV,V

1. Ellis Horowitz, Sartaj Sahni and Sanguthevar Rajasekaran, "Fundamentals of Computer algorithms", Galgotia Publications Pvt. Ltd., 2004.

Unit II,III

2. Jean-Paul Tremblay and Paul G.Sorenson, "An introduction to data structures with applications", Second Edition, Tata McGraw Hill Publishing Company Limited, New Delhi, 1995.

Books for Reference

1. A.V. Aho, J.E.Hopcroft, J.D. Ullman, "The Design and Analysis of Computer Algorithms", Addison-Wesley Publ. Comp., 1974.
2. Seymour E.Goodman, S.T. Hedetniemi, "Introduction to the design and analysis of algorithms", McGraw Hill International Edition, 2002

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Sem. II **Hours/Week: 2**
14UCS240802 **Credits: 2**

Skill Based Electives:
COMPUTER LITERACY

Objectives

* To impart the fundamental concepts of Computer System and to introduce the significances of latest trends and technologies in Information Technology.

Unit-I **(6)**

Introduction to Computers : Computer an Introduction - History of Computers - Evolution of Computers - Organisation of a Computer System - Input Devices & Usages - Output Devices and Usages - Storage Devices and Usages - Classification of Computers - Data Representation.

Unit-II **(6)**

Application of Computers: Introduction - Business Applications - Communication - Education - Banking - Home - Engineering - Law Enforcement - Medical Diagnosis - Government - Defence - Entertainment - Sports. Software: Programming Languages - Classification of Software - Application Software - Operating System - Database Management System.

Unit-III **(6)**

HTML : Introduction - Headings - Paragraphs - Comments - HTML Formatting Tags - Font Tag - Hyperlinks - Images - Lists - Tables.

Unit - IV **(6)**

WML : Overview - Functionality - VRML: Objectives of VRML - Features of VRML - Advantages and Disadvantages of VRML - Multimedia: Introduction - Elements of Multimedia - Multimedia Software - Networking and Internet:

Networking Fundamentals - Types of Network - Benefits of Network - Networking Hardware and Software - Internet - Major features of Internet.

Unit - V **(6)**

Smart Devices : Introduction - Types of Smart Phones - Operating Systems for Smart Phones - E - commerce : Introduction - Types of E-Commerce - Benefits - M Commerce - Applications of M-Commerce - SOCIAL NETWORKING & CYB ER LAW: Introduction - Characteristics of Social Networking Website - Social Networking Services - Cyber Law - Open Source - What is open source? - Open Source Software's.

BOOK FOR STUDY

1. Department of Foundation Course, "COMPUTER LITERACY", St. Joseph's College, 2013.

BOOKS FOR REFERENCE

1. ITL Education Solution Ltd, Introduction to Information Technology, Dorling, Kindersley (India) Pvt. Ltd, New Delhi.
2. Efraim Turban et al, Introduction to Information Technology, Wiley India Pvt. Ltd., New Delhi. 2006
3. Leon, Introduction to computers, Vikas Publishing House Pvt. Ltd., New Delhi. 2006.
4. Alexix Leon and Mathew Leon, Introduction to computers with Ms Office 2000, TMH, New Delhi. 2005.

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Sem. IV **Hours/Week: 5**
14UCS430211 **Credits: 4**

MICRO COMPUTER ARCHITECTURE

Objectives

* To impart knowledge on architectures and assembly language Programming concepts of 8-bit & 16-bit Processors.

Unit - I **(15)**

Microprocessor Architecture: Intel 8085 - Instruction Cycle - Timing diagram - Instruction Format - Addressing modes - Intel 8085 Instructions.

Unit - II **(15)**

Programming using 8085: Simple examples - 8-bit addition and subtraction - 16-bit addition - 8-bit decimal subtraction - complements of 8-bit and 16-bit number - shifting bits - - finding largest of two numbers - finding largest and smallest in an array - sum of series of numbers - 8-bit multiplication and division.

Unit - III **(15)**

Peripheral Devices and Their Interfacing: Address Space Partitioning - Memory and I/O Interfacing - Interrupts of Intel 8085 - Interfacing Devices and I/O Devices/PPI.

Unit - IV **(15)**

8086 Architecture and assembly language Programming: Basic 8086 Configuration - minimum mode and maximum mode - CPU Architecture - Internal Operation - Machine language Instructions - instruction Execution timing - Assembler instruction format.

Unit - V **(15)**

Data transfer instructions - arithmetic instructions - branch instructions - LOOP, NOP, HLT instructions - flag manipulation - shift, rotate and logical instructions Modular Programming for manipulating segment registers. (15)

BOOKS FOR STUDY

1. B. Ram, "Fundamentals of Microprocessors and Microcomputers", Dhanpat Rai Publications Pvt Ltd., 1998.
   Unit I : Chapter 3, 4; Unit II: Chapter 6; Unit III : Chapter 7
2. Y.C. Liu and G.A.Gibson, "Microcomputer Systems: The 8086/8088 family Architecture, programming and Design", Prentice Hall of India, New Delhi, 1986.
   Unit IV: Ch 2; Unit V : Ch 3.1 - 3.9, 4.1.

BOOKS FOR REFERENCE

1. Ramesh S. Gaonkar, "Microprocessor Architecture, Programming and Applications with the 8085/8080A", Wiley Eastern Ltd, New Delhi, 1989.
2. Barry B Brey, "The Intel Microprocessors 8086/8088, 80186, 80286, 80386, 80486, Pentium and Pentium Pro processors Architecture, Programming and Interfacing", Prentice Hall of India, New Delhi, 2002.

Sem. IV **Hours/Week: 3**
14UCS430212 **Credits: 2**

Software Lab-IV

DATA STRUCTURES USING 'C' AND 'c++'

C++ PRACTICALS

1. Create a class Array
2. Create a class Stack
3. Convert Infix to Postfix and evaluate Postfix using Stack class
4. Create classes for Queue and Circular Queue.

C PRACTICALS

5. Operations on Singly linked list
6. Operations on Doubly linked list
7. Binary Tree Creation and Traversals
8. Analyze Bubble Sort with number of passes, comparisons and data moves
9. Sequential and Binary Search
10. Merge two sorted data files.

Sem. V **Hours/Week: 4**
14UCS530302 **Credits: 4**

Core Elective (WS)

MULTIMEDIA

Objectives

* To understand and familiar the concepts of Multimedia by creating multimedia applications using Photoshop and Flash 8.

UNIT-I **(12)**

Multimedia: Introduction - Convergence of computers, Communications, and Entertainment Products- Brief Look - Technology trends - Appliances - Designer's view - Industry perspectives- Key Challenges.

UNIT - II **(12)**

Photoshop: Adjusting Image Brightness and Contrast - Understanding Histograms - Adjusting Brightness and Contrast - Levels - Curves - Balancing Dynamic Range with the Shadow - Working with Color - Calibrating Monitor - Understanding Color Theory - Comparing Color Spaces - Choosing Color Working Space - Understanding Color Channels - Evaluating Color - Adjusting Color.

UNIT - III **(12)**

Photoshop Contd.. Working with Layers - Adjustment Layers - Working with the Layers Palette - Understanding the Background Layer - Managing Layers - Layer Opacity and Blending Modes - Using Photoshop's Main Retouching Tools - Working with Brushes - Using the Clone Stamp Tool - Working with Tool Blending Modes - Using the Healing Brush - Busting Dust with the Spot Healing Brush - Using the Patch Tool - Fixing Red Eye - Retouching with Layers - Body Sculpting with the Liquify Command.

UNIT - IV **(12)**

FLASH: Understanding the flash 8 framework -The Brave New World of Expressiveness - Many Faces of Flash -Exploring web Technologies - Contextualizing Flash in the Internet - Exploring Companion Technologies - Recognizing Project Potential - Planning Flash projects - workflow Basics - Using the project panel.

UNIT - V **(12)**

Flash Contd.. Interface Fundamentals - Managing Windows and Panels - Tools Panel - Document Window - Timeline Window - Printing - Drawing in Flash - Geometric Shape Tools - Drawing Tools - Pen Tool - Fill and Stroke Controls - Optimizing Drawings - Putting Selection Tools to Work - Designing and Aligning Elements.

BOOKS FOR STUDY

Unit I

1. John F. Koegel Buford, "Multimedia systems", 4th Edition, Addison Wesley, Delhi, 2001.

Unit II, III

2. Mark Fitzgerald, "Photoshop®CS3 Restoration and Retouching Bible", Wiley Publishing, Inc, Canada, 2008.

Unit IV, V

3. Robert Reinhardt and Snow Dowd, "Macromedia Flash 8 Bible", Wiley India, New Delhi, 2006.

BOOK FOR REFERENCE

1. Mark Gatter, "Software Essentials for Graphic Designers: Photoshop, Illustrator, InDesign, QuarkXPress, Dreamweaver, Flash and Acrobat", Laurence King Publishing, 2006.

Sem. V
14UCS540502 **Credits: 4**

Extra Credit Course
C# •NET

Objectives

* To impart the concepts and programming skills in C#.NET platform.

Unit - I

Introducing C# and .NET Platform - Building Blocks of the .NET Platform - Additional .NET-Aware Programming Languages -.NET Assemblies - Common Type System - Common Language Specification - Common Language Runtime - The Assembly/Namespace/Type Distinction - Exploring an Assembly - The Platform-Independent Nature of .NET - Windows 8 Applications.

Unit - II

Core C# Programming Constructs - Simple C# Program - The System.Console Class - System Data Types and Corresponding C# Keywords - Working with String Data - Data Type Conversions - Implicitly Typed Local Variables - C# Iteration Constructs - Decision Constructs and the Relational/Equality Operators.

Unit - III

Methods and Parameter Modifiers - Understanding C# Arrays - Understanding the enum Type - Understanding the Structure Type - Value Types and Reference Types - Understanding C# Nullable Types.

Unit - IV

Understanding Encapsulation - Introducing the C# Class Type - Understanding Constructors - The Role of the this Keyword - Understanding the static Keyword - Defining the Pillars of OOP - C# Access Modifiers - C#'s Encapsulation Services.

Unit - V

Inheritance and Polymorphism: The Basic Mechanics of Inheritance - The Details of Inheritance - Structured Exception Handling: The Role of .NET Exception Handling- Throwing a General Exception - Catching Exceptions - Working with Interfaces: Interface Types - Interface Members at the Object Level.

BOOK FOR STUDY

1. Andrew Troelsen, " Pro C# 5.0 and the .NET 4.5 Framework", 6th Edition, Apress, New York, 2012.

BOOKS FOR REFERENCE

1. Jesse Liberty, "Programming C#", Second Edition, O'Reilly Press, 2002.
2. Robinson *et al*, "Professional C#", Fifth Edition, Wrox Press, 2002.
3. Herbert Schildt, "The Complete Reference: C#", Tata McGraw Hill, 2004.

WEB REFERENCE

1. http://social.msdn.microsoft.com

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Sem. V
14UCS540503 **Credits: 4**

Extra Credit Course

PROJECT DEVELOPMENT TOOLS

Objectives

* To give a fundamental knowledge of the various Integrated Development Environment and exposure to development of projects.

Unit I

Eclipse: How to get started with Eclipse - How to add projects to and remove projects from the workspace - Testing and debugging with Eclipse - Object-oriented development with Eclipse - More Eclipse skills - Applications - Execises.

Unit II

NetBeans: How to get started with NetBeans - How to open and close projects and import source code - Object-oriented development with NetBeans - Debugging with NetBeans - More NetBeans skills.-Application -Exercises

Unit III

JDeveloper: Creating Your First Application - Creating Your First Java Class - Using the Source Editor with Your Java Class - Debugging Java Programs - Managing Files.

Unit IV

Zen Studio: Installation and Registration - Working with Zen Studio - Environment - Enterprise Development & Deployment - Team Development.

Unit V

MySQL Workbench: MySQL Workbench Introduction - What is new in MySQL Workbench 6.0 - MySQL Workbench Editions - Installing and Launching MySQL Workbench - MySQL Connections - The Home Window - SQL Development - Data Modeling - Code Generation Overview - MySQL Enterprise Features - Database Migration Wizard - Extending Workbench - Keyboard Shortcuts - MySQL Utilities.

WEB REFERENCE

Unit I

http://www.murach.com/dloads/jse6/jse6_eclipse_tutorial.pdf

Application and Exercises:

http://www.murach.com/servlet/murach.downloads.
DownloadServlet?file=jse6_eclipse.zip

Unit II

http://www.murach.com/dloads/jse6/jse6_netbeans_tutorial.pdf
Application and exercises:
http://www.murach.com/serclet/murach.download.
DownloadServlet?fuke=jse6_netbeans.zip. .

Unit III

http://docs.oracle.com/cd/E18941_01/tutorials/jdtut_11r2_50
jdtut_11r2_50.html

Unit IV

http://static.zend.com/topics/Zend-Studio-QuickStart-Guide-v550-new.pdf

Unit V

http://dev.mysql.com/doc/workbench/en/index.html

Sem. V **Hours/Week: 2**
14UCS540601 **Credits: 2**

Skill Based Elective (WS)

DESKTOP PUBLISHING TOOLS

Objectives

* To impart the knowledge about the Desktop Publishing Tools such as, PageMaker and CorelDraw in order to improve the employability skills of the learners.

Unit I **(6)**

Adobe PageMaker: Using the toolbox-Viewing pages- Working with text and graphics - Moving between pages - Correcting mistakes- Creating a publication from scratch - Setting up pages - Using Master pages - Using the zero point - Nonprinting guides - Setting up ruler guides - Numbering pages.

Unit II **(6)**

Adobe PageMaker: Creating text blocks - Formatting text - Duplicating an object- Control palette basics - Grouping and ungrouping objects - Locking objects - Aligning and distributing objects - Rotating an object - Reflecting an object - Skewing an object - Cropping a graphic - Printing in PageMaker.

Unit III **(6)**

CorelDraw: CorelDraw terminology and concepts - application window - workspace tools - working with template - zooming and panning - working with views - lines, outlines and Brush Strokes.

Unit IV **(6)**

CorelDraw: Formatting lines and Outlines - Drawing rectangles and squares - Applying uniform fills - Applying pattern fills.

Unit V **(6)**

CorelDraw: Working with color - working with custom color palettes - understanding color models - using Special Effects - Using Text in Drawing - Adding bitmapped images - Print a drawing.

BOOK FOR STUDY

1. Vishnu Priya Singh and Meenakshi Singh, “DTP Course Book”, CompuTech Publication Ltd., New Delhi, 2nd Edition, 2011.

BOOK FOR REFERENCE

1. Shirish Chavan, “Rapidex DTP Course”, Unicorn Books Pvt. Ltd., New Delhi-02, Revised and Enlarged Edition - 2005.

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Sem. VI **Hours/Week: 4**
14UCS630217 **Credits: 3**

COMPUTER NETWORKS

Objectives

* To enlighten the concepts of network models, the applications of various layers in the Network model, LAN architecture, Protocols and Client, Server computing.

Unit I **(12)**

Introduction to Computer Networks and Data Communications: Need for Computer Networks - Evolution of Computer Networks - Data Communication Fundamentals - Data Transmission - Transmission Media - Classification of Computer Networks - Switching and Routing - Routing - Multiplexing and Concentration - Concentrator - Terminal Handling - Components of Computer Network.

UNIT II **(12)**

OSI Reference Model - The Physical Layer - Data Link Layer - Network Layer - Transport Layer - Session Layer - Presentation Layer - Application Layer. Transmission Control Protocol: Network layer - Transport Layer - Application layer.

UNIT III **(12)**

IEEE Standards - The Ethernet - Token Bus - Token Ring - The X.25 Protocol - SNA Model Digital Network Architecture.

Unit IV **(12)**

Local Area Network : LAN Architecture - LAN Advantages and Services - Characteristics of a LAN - LAN Topologies. Wireless LANs - Components of Wireless LANs - Working of Wireless LANs - Transmission Media - Wireless LAN Types - Protocol for Wireless LAN - Uses of Wireless LAN.

Unit V **(12)**

Client / Server Computing : Clients - Server. Distributed Applications:Web technology - HTTP- Web Client - Web Server - HTML. Distributed Processing: Three Tier Architecture.

BOOK FOR STUDY

1. Rajesh, Eswarakumar, Balasubramanian, “Computer Networks, Fundamentals and Applications”, Vikas Publishing House Pvt. Ltd., 2002.

BOOKS FOR REFERENCE

1. Behrouz A Fourouzan, “Data Communications and Networking”, McGraw Hill, Fourth Edison, 2006.
2. William Stallings, “ Data and Computer Communications”, Prentice Hall of India, Seventh Edition, 2004.

Sem. VI **Hours/Week: 3**
14UCS630223 **Credits: 2**

COMPREHENSIVE EXAMINATION

Unit I

Discrete Mathematics and Applications of Operations Research. (9)

Unit II

Programming concepts in C, C++, JAVA. (9)

Unit III

Concepts of Database Systems.(9)

Unit IV

Computer Networks and Operating system Concepts. (9)

Unit V

Software Engineering: Analysis, Design, Implementation and Testing.(9)

BOOKS FOR REFERENCE

For Unit I

1. Bernard Kolman & Robert C.Busby, "Discrete Mathematical Structure for Computer Science", Second Edition, Prentice Hall of India, New Delhi, 1987
2. Rathindra P. Sen, "Operations Research Algorithms and Applications",PHI, New Delhi, EEE. 2010

For Unit II

3. Brian W. Kernighan, Dennis M. Ritchie, "The C Programming Language", Prentice Hall of India Pvt. Ltd., New Delhi, 1989.
4. Bjarne Stroustrup, "The C++ Programming Language" , Addison-Wesley, New York, 1999.
5. Patrick Naughton and Herbert Schildt, "JAVA 2 - The Complete Reference", Fifth Edition, Tata-McGraw-Hill, New Delhi, 2002.

For Unit III

6. S.K. Singh, "Database Systems - Concepts, Design and Appplications",Dorling Kindersley (India) Pvt. Ltd., Second Impression, 2008.

For Unit IV

7. William Stalings, "Data and Computer Communications", Pearson Education, India Ltd.
8. S.E Madnick and J J Donovan "Operating Systems" McGraw Hill International Book Co, New Delhi , 1987

For Unit V

9. K.K. Aggarwal & Yogesh Singh, "Software Engineering", New Age International Publishers, Revised Second Edition, 2005

WEB REFERENCE

1. http://www.indiabix.com/
2. http://www.mcqquestions.com/

Sem. VI
14UCS640504 **Credits: 4**

Extra Credit Course:
WEB TECHNOLOGY

Objectives

To impart the advanced programming skills about dynamic web page design.

Unit I

XHTML: Introduction - Editing XHTML - W3C XHTML Validation Service - Headers - Linking - images - Special characters and more line breaks - Nested unordered lists - XHTML tables - Forms - complex XHTML forms - internal linking - creating and using image maps - meta elements - frameset elements - nested frameset elements.

Unit II

Cascading Style Sheets (CSS): Inline styles - embedded style sheets - conflicting styles - linking external style sheets - W3C CSS validation service - positioning elements - background - element dimensions - Text flow and Box model - User style sheets.

Unit III

ASP: How Active Server Pages Work - Setup - Active Server Page Objects - Simple ASP examples - File System Objects - Session Tracking and Cookies - Accessing a Database from an Active Server Page - Server-Side ActiveX Components.

Unit IV

JSP: JavaServer Pages Overview - A First JavaServer Page Example - Implicit Objects - implicit objects - scripting - Scripting Components - Standard Actions - Directives - Custom Tag Libraries.

Unit V

AJAX: AJAX a new approach - understanding JavaScript for AJAX - Immediate solutions - Asynchronous Data Transfer with XML http request - Implementing AJAX frameworks - PHP and AJAX - Web services in AJAX.

BOOKS FOR STUDY

Unit I,II,III,IV

1. Harvey M. Deitel, Paul J. Deitel and Tem R. Nieto, “Internet and World Wide Web : How to Program”, Pearson Education, Second Edition, 2001.

Unit V

2. Kogent Solutions Inc., “AJAX Black Book”, Dreamtech press, 2008

BOOK FOR REFERENCE

1. Kogent Solutions Inc., “Web Technologies Black Book”, Dreamtech press, 2009.

Sem. VI
14UCS640505 **Credits: 4**

Extra Credit Course
WEB GRAPHICS

Objectives

* To offer the knowledge of creating and working with digital images and to produce a presentation package using multimedia tools.

Unit I

Introduction to multimedia - PhotoShop:

Environment - layers and workpath - Image editing - channels , masks and actions - filters - rollovers and animations.

Unit II

Dreamweaver:

Environment - developing a website - tables and images - navigating in a website - CSS stylesheet - layers, frames and forms - behavior.

Unit III

Flash:

Introduction - drawing and colouring tool - animation - tweening - interactive elements.

Unit IV

Illustrator:

Interface - working with shapes - layers - blend, path and mask.

Unit V

Director:

work space - animation and effects - sound and video.

BOOK FOR STUDY

1. BPB Editorial Board, “Multimedia and Web Design Course”, BPB Publications, New Delhi, 2005.

BOOK FOR REFERENCE

1. NIIT, “Interactive Communication Through Multimedia - An Overview”, Prentice Hall of India, New Delhi, 2004.

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SEM-V Hours/week: 4
14UEC530302 Credits: 4

Core Elective-2 (WS)
BASIC ECONOMICS

Objective

* To provide basic and conceptual understanding of economic concepts and principles.

Unit-I Nature and Scope of Economics

Definition, nature and scope of economics; micro and macro economics; positive and normative economics; working of economic systems with special reference to the capitalistic, socialistic and the mixed economies.

Unit-II Demand Analysis

Meaning of Demand – Law of Demand –Elasticity of Demand - indifference curves - meaning and properties.

Unit-III Production and Costs

Factors of Production – Features – Types of Cost concepts.

Unit-IV National Income and Inflation

Concept, significance and measurement of national income- Concept of inflation- demand pull and cost push inflation- deflation and stagflation.

Unit-V International Trade

Internal and International Trade: Features- A note on theories of International Trade-terms of trade - rate of exchange- balance of payments-Liberalisation, Privatisation and Globalisation - WTO.

TEXT BOOK

1. S.Sankaran, (2003) Micro Economics, Margham Publications, Madras.
2. Jhingan M. L., (2012) Advanced Economic Theory, Konark, New Delhi.
3. Ruddar Datt and Sundharam K.P.M. (2013), Indian Economy, Sultan Chand, New Delhi.

BOOKS FOR REFERENCE

1. Da Costa., G.C., (1980) Production, Prices and Distribution, New Delhi: Tata McGraw Hill.
2. Hirshlefer, J. and A. Glazer., (1997) Price Theory and Applications, Prentice Hall of India, New Delhi.
3. Kennedy, Maria John M., (1999) Advanced Micro Economic Theory (Second Edition) Himalaya, Publishing House, New Delhi.
4. Stigler, G., (1996) Theory of Price (Fourth Edition) PrenticeHall of India, New Delhi.
5. Ahuja H.L. (1996) - Principles of Micro Economics, A New look at Economic Theory, S. Chand, New Delhi.

SEM-VI Hours/week: 4
14UEC630303 Credits: 4

Core Elective (3) (WS): ENERGY ECONOMICS

Objective

* To know overall perspective of Energy sources, its role and impact on Economic Development.

Unit - I: Energy Economics

Meaning- Conventional sources: Commercial and Non commercial Energy- Renewable and Non-renewable sources- Direct and Indirect sources of Energy- Other sources.

Unit - II: Non – Conventional sources

Solar Energy- Wind Energy- Tidal Energy- Geothermal Energy- Ocean Energy- Wood Fuel- Biogas- Energy from the waste and its Economic Basis (Disposal of Toxic wastes, Sludge power, Green factory).

Unit-III: Environmental Impact Analysis

Coal - Oil - Natural Gas - Nuclear Fission.

Unit-IV: Energy Problems and Planning in India

Nature of the Energy Problems – Present energy situation- Future energy demand- Energy Planning in India: Integrated Energy Planning – Energy strategy- Current Plans.

Unit-V: Energy Conservation and Energy Programmes

Conservation at Electric Utilities- Energy conservation in ONGC – Strategies for energy conservation- Oil crises of the world- Energy Programmes of the International Organizations.

Text Book

1. Energy Economics- Dhulasi Birundha Varadarajan , Sterling Publishers, Private Limited- New Delhi-16. 1993.

Books for Reference

1. Mohan. I, (1989) “Environmental Pollution and Management”, Ashis Publishing House, New Delhi.
2. Pandey and Carney, (1998) Environmental Engineering, Tata Mc Graw Hill, New Delhi.
3. Field. RC, (2000) Environmental Economics, Mc Graw Hill, New York.
4. Karpagam, M (1999) Environmental Economics, Sterling New Delhi.
5. Katar Singh, Anil Shisodia (2009) Environmental Economics – Saga Publications - New Delhi.
6. Ruddar Datt and Sundharam K.P.M., Indian Economy, Sultan Chand, New Delhi, 2009.

Sem. III **Hours/Week: 4**
14PEC3401 **Credits: 4**

IDC (BS):

MANAGERIAL ECONOMICS

Objective

* To give a basic knowledge about General economics to students and To provide the applications of economics through management concepts to students.

UNIT I : NATURE AND SCOPE OF MANAGERIAL ECONOMICS

Definition of Economics and Managerial Economics-Nature, Scope, Functions, Uses and Limitations of Managerial Economics.

UNIT II: DEMAND ANALYSIS

Meaning - Law of Demand and its determinants- Meaning, types and degrees of elasticity- Measurement of price elasticity- Meaning - Factors involved in forecasting - Methods of forecasting - survey method, graphical method and experimental method - criteria for good forecasting.

UNIT III: PRODUCTION ANALYSIS

Meaning and the managerial use of a production function.- Law of variable proportions-Iso-quant - properties and the equilibrium alone. Meaning - Total, Average and Marginal cost (simple problems to calculate these values) Meaning - Total, Average and Marginal revenue (simple problems to calculate these values) Meaning - construction of a breakeven chart (anyone with simple practical application of it) - and the margin of safety.

UNIT IV: TECHNIQUES PRICING

Full cost pricing - Marginal pricing - Target pricing - Peak load pricing - Going rate pricing - Cyclical pricing - Customary pricing - Product-line pricing - Skimming pricing - Penetrating pricing - Pricing of joint product, new product.

UNIT V: NATIONAL INCOME AND ECONOMIC POLICIES

National income - Components, Methods and Difficulty in the Calculation of Natinal Income - Inflation - Causes, Types & Effects - Monetary Policy - Fiscal Policy - Budget.

BOOKS FOR STUDY

1. S.Sankaran - Economics Analysis, Margham Publications, Madras, 1991.
2. P.L. Mehta: Managerial Economics - Analysis, problems and causes. Sultan Chand & Sons, 1992
3. R.L. Varshney and K.L. Maheswari: Managerial Economics. Sultan Chand & Sons, 1987.
4. Joel Dean: Managerial Economics. Prentice Hall of India, 1987.
5. Mote, Paul and Gupta: Managerial Economics Concepts and cases. 1979.

Sem. III
14PEC3112 **Credits: 2**

Self Paced Learning:

TOURISM MANAGEMENT

Objective

* To study the importance of Tourism Management and its promotion.

UNIT I: BASIC CONCEPTS OF TOURISM

Meaning, Definition, Concepts and Types of Tourism - Tourism and economic development - Importance of tourism - Sustainable Tourism.

UNIT II: TOURISM STATUS

Tourism status in global and national - Impact of tourism development in India - Tourism Development Corporation in India - Programmes in Tourism Development - Infrastructure Development Programme - Integrated Development of Tourism Circuits, Product infrastructure and Destination Development - Assistance for Large Revenue Generating Projects.

UNIT III: TOURISM PRODUCT AND TOURISM MARKETING

Tourism product - Attractions, Availability, Accessibility and Amenities - Tourism Marketing - Various types of tourism Marketing in India - Impact of Information Technology in tourism management.

UNIT IV: TOURISM SERVICES

Hotels - Motels - Resorts - Boating Clubs - Conducted /Organized Tours - Package Tour - Insurance - Guides - Tour Operators - Tour Promoters - Medical Tourism- Medical Tourism in India.

UNIT V: GROWTH OF TOURISM

Growth of tourism in India - Problems faced by tourism industry - National Tourism Policy of India - Fund allocation for tourism in India - TN Tourism Development Corporation.

TEXT BOOK

1. Nirmal Kumar. S, Problems of Tourism in India -Tourism and Economic Development, APH, New Delhi 1996.

BOOKS FOR REFERENCE

1. Biswanath Ghosh, Tourism and Travel Management, Vikas, New Delhi, 1998.
2. Arun Kumar Shankar, Action Plan and Priorities in tourism development, Kaniskha, New Delhi, 1998.
3. Vinukumar. S and Chandrasekhar, K.S, Sustainable Development and Tourism, 2004.

Sem. IV **Hours/Week: 4**
14PEC4402 **Credits: 4**

IDC (WS):
INTERNATIONAL BUSINESS ENVIRONMENTAL

Objective

* The purpose of this paper is to enable the students learn nature, scope and structure of International Business, and understand the influence of various environmental factors on international business operations.

Unit I: Introduction to International Business

Importance, nature and scope of International business; modes of entry into International Business-internationalization process and managerial implications. (12 Hrs)

Unit II: Environmental Context of International Business

Framework for analyzing international business environment - Domestic, foreign and global environments and their impact on international business decisions .(12 Hrs)

Unit III: Global Trading Environment

World trade in goods and services - Major trends and developments; World trade and protectionism - Tariff and non-tariff barriers; Counter trade. (12 Hrs)

Unit IV: International Financial Environment

Foreign investments -Pattern, Structure and effects; Movements in foreign exchange and interest rates and then impact on trade and investment flows. (12 Hrs)

Unit V: International Economic Institutions and Agreements

WTO, IMF and World Bank, - MNCs. Regional Economic Groupings in Practice: Regionalism vs. multilateralism, Structure and functioning of European Common Market; Regional economic cooperation. (12 Hrs)

Text Book

1. Francis Cherunilam, International Business, Text and Cases, PHI Learning Private Limited, New Delhi, 2010.

Books for Reference

1. Bennet, Roger, International Business, Financial Times, Pitman Publishing,London, 1999.
2. Bhattacharya, B., Going International: Response Strategies of the Indian Sector,Wheeler Publishing, New Delhi, 1996.
3. Czinkota, Michael R.,et. al., International Business, the Dryden Press, Fortworth,1999.
4. Danoes, John D. and Radebaugh, Lee H., International Business: Environment and Operations, 8th ed., Addison Wesley, Readings, 1998.
5. Griffin, Ricky W. and Pustay, Michael W, International Business: A Managerial Perspective, Addison Wesley, Readings, 1999.
6. Hill, Charles W. L., International Business, McGraw Hill, New York, 2000.

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Sem. I **Hours/Week: 4**
14PEL1401 **Credits: 4**

IDC (WS):
ELECTRONICS MEDIA

Objective

- To learn about technological innovation of electronic media

Unit I: PUBLIC ADDRESSING MEDIA

Introduction to public addressing media - Block diagram of PA system - Basic of PA system - watts and volume - matching ohms - Avoiding hum - Avoiding feedback - microphone - wired and wireless - wireless frequency consideration -Active and passive speakers - Size of speakers - Types of input on a mixer - mixer channel — cable and types of plugs - multicores - Home theater network - connection diagram - home network connection diagram - Front projector connection diagram - Summary of Home theater networks and working.

Unit II: AUDIO SYSTEM AND BROADCASTING SYSTEM

Audio System: Voice signal- Musical signal- Multi track recording- Mixing console: structure-channel input- master output control- Digital versus Analog mixing console-Studio Monitor-Broadcasting System: Pilot signal-Information signal- Frequency and amplitude modulation-Transmission line.

Unit- III: VIDEO SYSTEM

Introduction to digital video equipment: working principle of a digital video camera -major components - operation and functions of camera - types of cameras - characteristics and features of cameras - Angle of view -TV: transmission and propagation of tv signal, tv antenna- receiver: VHF tuners-vision IF subsystem- inter carrier sound system- video amplifiers -television display technology: CRT, plasma, LCD-LED - 3D- television standards: NTSC, PAL, HDTV- distribution technology - cable television, DTH, - interactive television- IPTV-process of webcasting.

Unit -IV VIDEO PRODUCTION AND TELECASTING

Introduction to digital production studio: basic studio structure and equipment- roles of the production - production process - video editing systems and their components - video mixers - Telecasting of audio and video signal - role of satellite in tv system-satellite and terrestrial broadcasting - different transmission bands-multimedia projector.

Unit V: TABS AND SMART PHONES IN MEDIA

A smart phone as communication device- Mobile devices hardware-ARM cortex processors evolution- Mobile operating system-symbian-Linux-windows-java-Android-Garnet-Mobile applications-mobile tv-mobile radio-mobile internet.

Books for Study

Material prepared by the Department.

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Sem. II **Hours/Week: 5**
14PEL2109 **Credits: 2**

SELF PACED LEARNING

Objective

- To improve self learning ability in novel trends in electronics.

SCADA and power electronics

Introduction to SCADA-Common system components: Remote terminal units-Telemetry system-Human-Machine interface- System concepts-Hardware solution: SCADA architecture-Security issues. Power electronics: Introduction to power electronics - Concept of power electronics- Application of power electronics-Types of power electronics converters- Power semiconductor device: Diode and Transistors.

PROTEUS and embedded simulation

Actual use of proteus - Creating a new design - Function of icons in design window - Knowing the components available in proteus ISIS - Use of libray to pick device/symbol and place - Icons of pick device window and its explanation -Use of virtual terminal - Use of oscilloscope - DC motor drive circuit - Stepper motor drive circuit - Servo motor driver- Component designing - PCB designing in proteus ARES - Steps to design single and double side PCB.

Reference

- http://www.theengineeringprojects.com/2013/03/a-complete-tutorial-on-how-to-use.html

Multi Sim and circuit simulation

Multisim opening screen - Principle icons on the three main tool bars of workbench - Parts bin - Instruments - mode and simulation - Opening and saving the file - Placing the components - Building a circuit - Wiring the circuit - Editing a component - adding instrumentation in the circuit - Simulation - Virtual instrumentation - Analysis - The grapher - The postprocessor - Examples - Simple resistor network - An RC network using the oscilloscope and Bode plotter - Sequential Logic - D-Type and JK Flip Flops

Reference

- http://csserver.evansville.edu/~blandfor/WrkBnchTutorial.pdf
- http://www.me.psu.edu/rahn/me462/Multisim.pdf
- http://www.ni.com/pdf/manuals/372330a.pdf

Cloud computing and data acquisition

Trends of computing- Introduction to distributed computing - Cloud computing - Properties and characteristics-Service Models-Deployment models-Infrastructure as a service (IaaS)-Platform as a service (PaaS)-Software as a service (SaaS)-Web 2.0-Web OS-Cloud issues and challenges-cloud provider lock in-Security-Connecting data logger online-complete data logging using cloud computing.

PSpice and analog circuit simulation

Introduction to PSPICE- Project creation- Libraries- Creating a schematic parts library- Preparing for layout: Annotation-Creating footprint libraries-Assigning footprints to parts-Creating a netlist- Creating a board template file- Layout-Creating a new board-Getting around and placing part - autorouting - Manual routing- Cleaning up the design-Documenting the design-place ground- Display properties-place net alias-Simulation settings.

Embedded Design using MSP430

Introduction to MSP430- Pin Description- Functional Block Diagram- CPU Description- Instruction set- Interrupt Vector addresses- Operation Mode-Special function register- Boot Strap Loader - Memory Organization- Flash Memory-Watch Dog Timer -Absolute Maximum Rating - Basic Programming: LED Blinking— Concepts of Interrupt- Serial port communication- Serial port Echo - ADC -ADC in serial port- Pulse Width Modulation.

References

- MSP430 Data Sheet
- http://www.referencedesigner.com/tutorials/msp430/msp430_01.php

Android and data acquisition

Introduction to Android - Starting with android - The Android emulator - Development environment - Creating database - Designing - SQLite-Programming - SQLite databases.- Develop user - Friendly Android applications.

Book for Study

1. Material prepared by the Department.

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Sem. IV **Hours/Week: 6**
14PEL4115 **Credits: 5**

PROGRAMMABLE DIGITAL SIGNAL PROCESSOR AND CCS

Objective

- To imparts the basics about the PDSP's and to develop the Programming skills on code composer studio.

Unit - I: ARCHITECTURE OF FIXED POINT PDSP

Multiplier and multiplier accumulator (MAC) - Modified bus structure and memory access schemes - Multiple access memory - Multi ported memory - VLIW architecture - Pipelining - Special addressing modes in PDSP's - On-chip peripheral - Architecture of TMS 320 C5X.

Unit - II: ASSEMBLY LANGUAGE INSTRUCTION AND PROGRAMMING

Syntax - Addressing modes - Load / Store instruction - Addition/Subtraction instruction - Move Instruction - Multiplication instruction - NORM instruction - Program control instruction - Peripheral control - Program for familiarization of the addressing modes - Program for familiarization of the arithmetic instruction - Real time signal processing program.

Unit - III: ARCHITECTURE OF FLOATING POINT PDSP

Introduction - Overview of TMS 320C3X devices - Internal Architecture - CPU - CPU register file - Memory organization - Cache memory - Peripheral - Data format - Addressing modes - Groups of addressing modes - Assembly language instruction - Processing real time signal - Serial port - Capture and display of sine wave.

Unit- IV: ARCHITECTURE AND INSTRUCTION SET OF TMS320C6713

Introduction -TMS320C6x Architecture- Functional Units-Fetch and Execute Packets-Pipelining- Registers- Linear and Circular Addressing Modes-Indirect Addressing-Circular Addressing-TMS320C6x Instruction Set -Assembly Code Format-Types of Instructions-Timers-Interrupts-Interrupt Control-Registers-Interrupt Acknowledgment-Direct Memory Access

Unit - V: PROGRAMMING OF TMS320C6713 USING CODE COMPOSER STUDIO

Code Composer Studio Development- Code Generation Tools -Creating a New Project-Adding Files to a Project-Reviewing the Code-Building and Running the Program-Changing Program Options and Fixing Syntax Errors.

Examples: Sine Generation Using Eight Points with DIP Switch Control-Ramp Generation without a Lookup Table-Amplitude Modulation- FIR Filter Implementation: Bandstop and Bandpass-IIR Filter Implementation Using Second-Order Stages in Cascade.

Books for Study

1. Venkataramani B, Bhaskar M., "Digital signal processors - Architecture, Programming and Applications", First Reprint, TATA McGraw Hill, 2003
2. Digital Signal Processing and Applications with the C6713 and C6416 DSK, Rulph Chassaing, A JOHN WILEY & SONS, INC., PUBLICATION, 2005.
3. TMS320C6000 Code Composer Studio Tutorial

BOOKS FOR REFERENCE

1. Salivahanan S, Vallavaraj A, Gnanapriya C, "Digital Signal Processing", Tata McGraw Hill Publishing, 2003.
2. TMS320C6713 data sheet.

SECTIONS

UNIT	BOOK	SECTIONS
1	1	2.1-2.8,3.1-3.14
2	1	4.1-4.9,6.2-6.4
3	1	7.1-7.8,8.1-8.4, 9.5 - 9.7
4	2	3.1-3.8, 3.13,3.14,3.16
5	3 2	1.1, 1.2, 2.1-2.5 List of Examples:1.1,2.9,2.14,4.1,5.1

Sem. IV
14PEL4117 **Credits: 2**

COMPREHENSIVE EXAMINATIONS

Unit - I: OPERATIONAL AMPLIFIER AND ITS APPLICATION

The ideal op-amp - Equivalent circuit - Summing - Scaling and averaging amplifier - Instrumentation amplifier - Integrator - Differentiator - Active filters - First order low pass and high pass butter worth filter - Band pass filter - Band reject filter - All pass filter - Oscillator principle - Square wave - Triangular wave generator - Comparator - Zero crossing detector - Schmitt trigger - Sample and Hold circuit - V to I with floating & grounded load - R and 2R ladder method - Binary weighted resistors.

Unit - II: SEQUENTIAL CIRCUIT COMPONENTS

Introduction to sequential circuits - Latches and Flip Flop: SR latch - Timing problems and clocked SR latches - JK latch - Master slave latch - Delay Flip Flop - T Flip Flop - Flip Flop excitation requirements - Registers: Serial load shift registers - Parallel load shift register - Parallel to serial conversion - Universal shift registers.

Unit - III: INTEL 8085 AND 8086 ARCHITECTURE AND ITS PHERIPHERAL

Introduction to INTEL8085 -Instruction set - Addressing modes - Status flags - DMA controller 8257-Data transfer schemes - Interrupts of INTEL 8085 - interfacing and programming 8255 - 8259 programming and interfacing - 8251 programming and interfacing - 8253 programming and interfacing - Programmable interval timer interfacing - 8279 keyboard interfacing. - Introduction to 8086 microprocessor - Internal architecture - Addressing modes - Instruction set -Segment registers - Memory segmentation.

Unit - IV: POWER ELCTRONICS

Chopper-Type A chopper-Type B chopper-Type C four quadrant chopper-Pulse width modulated IGBT AC chopper - Single-phase voltage source inverters- PWM inverters - Current source inverters series inverters- Single-phase parallel inverters-Principle of cycloconverter operation- DC motor - Single phase SCR drive - Three phase SCR drive - Application of IGBT in DC Motor control for home appliances - Induction motor characteristics -Speed control methods of induction motor - Synchronous motor control.

Unit - V: TRANSDUCERS AND SENSORS

Introduction to measurement - Direct and indirect measuring methods - Transducers - Resistive transducers - Potentiometers - Strain gauges - Types

of strain gauges - Resistance thermometers - Variable inductance transducers - Linear variable differential transformer - Capacitive transducers - Peizo electric transducers - Hall Effect transducers - Magneto resistors - Differential amplifier - Voltage follower - Instrumentation amplifier - Wheatstone bridge - AC bridges.

Unit VI: COMMUNICATION SYSTEM

The sampling theorem - PAM - Natural sampling - Flat top sampling - PCM - Companding - Multiplexing PCM signal - Phase shift keying - binary PSK - Differential PSK - FSK - Binary FSK - Similarity of BFSK and BPSK - Physical nature of optical fiber - Basic principle involved in optical fiber technology - Fiber classification - Acceptance angle, acceptance cone and numerical aperture of fiber -Fiber splices, connector and couplers - Fiber attenuation Advantages/disadvantages of using optical fiber as communication medium - LED - Structures of LED - LASER - Types of laser - Photo Detectors - characteristics - PIN photo diode - APD photo Transistor - Repeater- MUX-DMUX-Line coding - Fibre optic switches - Bypass switches.

Sem. IV **Hours/Week: 3**
14UEL430301A **Credits: 3**

Core Elective-A:

HOME APPLIANCES SERVICING AND REPAIR

Objective

- To explain the operation and troubleshooting techniques of home appliacnes.

UNIT - I: Electronic components

Introduction - Passive components - Transformer - Working principle - Application - Active devices: Diode - Transistor - Analog IC - amplifier - Oscillators and Digital ICs - logic gates - Encoder-Decoder.

Unit - II: Equipments for servicing

Soldering Iron-Flux-lead-Zero defect soldering-Desoldering pump- Soldering station-Basics of Multimeter-Measurement of current, voltage and resistance using multimeter-Checking transistors and diodes-In circuit measurements.

Unit - III: Heating Appliances

Heater types-working principle- Heating Rod-Iron Box-Iron box with steamer-Toasters- Geysers- MicroWave Ovens- Oven -Disassembling and assembling procedure- Fault indicator-Testing and Troubleshooting methods.

Unit - IV: Motorised Appliances

Types of Motors-DC and AC motor- Fans- mixers- blenders-wet grinders-Circuit connection- Testing methods. Washing machine-Electrical connections-assembly- Dish washer -Electrical connection-Testing and Trouble shooting methods.

Unit - V: Refrigeration Appliances

Fridge- Electrical connection- Compressor-Coolants-Automatic defrost circuits -Testing and troubleshooting of refrigerators-Air coolers and Air conditioners-Mounting and fixing of Air Conditioners-Testing and troubleshooting methods.

BOOK FOR STUDY

1. Material prepared by the department.

Sem. IV **Hours/Week: 4**
14UEL430301B **Credits: 3**

Core Elective-B:

LAB EQUIPMENTS MAINTENANCE AND SERVICING

Objectives

- To induct the knowledge of basic lab equipments functioning.
- To learn common troubleshooting methods and testing methods of lab equipments.

Unit - I: Passive and Active components

Resistors - Types - Colorcode - Wattage - Tolerence-Capacitors - Types - Inductors - Transformer - Stepup and step down - Uses - Diode - Ratings - Operation - Transistor - npn and pnp - Switching - Amplifier - Diode and Transistor testing -MOSFET - Types - Testing MOSFET.

Unit - II: Power supply

AC power supply-Parameters-DC power supply design-Regulated power supplies-Single-Dual- Variable voltage-Switched mode power supply-Transformerless power supply design- Design of fuses-Testing and troubleshooting.

Unit - III: Analog Equipments

Variable Resistance Box - Variable Capacitance Box- Variable inductance box - Cathode Ray oscilloscope - Block diagram - Frequency measurement - Function generator - Range of frequencies - Amplitude - Types of waves - Meters - Ammeter-Voltmeter - Testing and trouble shooting.

Unit - IV: Digital Equipments

LED-Current limiting concept-Switches-Types-Logic module-Circuit diagram-Concept of common ground-Pulse generator-Circuit diagram - Active low and Active high pulses - Logic modules interfacing boards-Kits-Testing and troubleshooting methods.

Unit - V: Common chemistry lab equipments

Digital balance-Block diagram-Load cell sensors-pH meter-Electrode specifications-Stirrer-Centrifuge-Rotation Per Minute measurement-Magnetic stirrer with paddle-Block diagram-Ovan-Heating elements.

BOOK FOR STUDY

Material prepared by the department.

Sem. V **Hours/Week: 2**
14UEL540601 **Credits: 2**

Skill Based Elective-I

ENTREPRENEURIAL ELECTRONICS

Objective

- To empower the design and trouble shooting skills in electronics.

Unit - I: Introduction To Electrical Technology

Introduction to Electricity-Alternating Current Based System - Single Phase - 3 Phases - Dc Signal - Dc Source - Fundamentals - Voltage, Current and Power-Power Factor-Passive Components.

Unit - II: Measuring Instruments

Introduction to Multimeter - Analog Multimeter - Digital Multimeter - Voltage Measurement - Current Measurement -Resistance Measurement - Cathode Ray Oscilloscope - Frequency Calculation - Function Generator - Calibration.

Unit - III: Active Components

Diode - Half Wave Rectifier - Switching Circuits - Transistor - NPN testing - PNP testing - Transistor Amplifier-Oscillator - Metal Oxide Semiconductor Field Effect Transistor -Introduction - MOSFET Types - Testing MOSFET - Switching Circuits Based On MOSFET.

Unit - IV: Servicing and Trouble Shooting

Soldering and De-Soldering Techniques - Pretreatment-Precaution During Soldering And Desoldering - Dc Power Supply Design - Single - Dual - Variable Voltage - Printed Circuit Board - Layout Drawing.

Unit - V: Hobby Circuits

Circuit Design Basics - Amplifier Circuits - Applications - Oscillator Circuits - Automated Switching Circuits - Relay Based Circuits - Opto-Coupler Based Circuits - Timer / Counter Based Circuits.

BOOKS FOR STUDY

Material prepared by the department.

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Sem. VI
14UEL630218 **Credits: 2**

COMPREHENSIVE EXAMS

Unit I: Electric circuit theory

DC circuit analysis-KCL-KVL-Series and parallel circuits-Network theorem-Thevenin-Norton-Superposition-Reciprocity-Sinusoidal analysis-Terminologies-RLC series and parallel circuits-Different kinds of power-Transient analysis-RL-RC and RLC-Network topology-Tie set and cut set.

Unit II: Electronic Devices

Diodes-PN junction-Zener diode-Varactor diode-Tunnel-Schottky diode-PIN diode-Transistor configurations-a-b-g relationship-FET characterestics and amplifier- MOSFET-types-MOSFET Switches- UJT-characterestics-standoff ratio-SCR-TRIAC-DIAC-IGBT-LED-LCD.

Unit III: Digital electronics

Number system-Decimal-Octal-hexadecimal-Conversion-Logic gates-minimization technique-K-Map- Quine McCluskey-Combinational circuits-Adder-Subtractor-Encoder-Decoder-Sequential circuits-Latch-Flipflop-up/down counter-synchronous counter-Asynchronous counter-Shift register.Memory devices-RAM-ROM-PROM-EEPROM

Unit IV: Microprocessors and Mircrocontroller

Microprocessor 8085-Architecture-Instruction set-Assembly level programming-Interfacing Peripheral IC's-8251-8253-8259-8237-8279-Microcontroller 8051-Architecture-Instruction set-Assembly level programming-ADC and DAC interfacing.

Unit V: Control system and communication system

Mathematical models of control system-Block diagram-Simplification-signal flow graph-Automatic control system-Feedback system-sensors-Time response of system-P,PI.PID controllers-Stability analysis-Routh Hurwitz-Root locus method-Bode plot-Nichols chart.

Modulation: AM, FM and PM techniques-Demodulation: AM and FM - Pulse modulation technique - Fibre optic communication - Single mode and multimode operation -Modulation techniques.

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Sem. I
14PEN1105 **Credits: 2**

Self-Paced Learning:

BASICS OF ENGLISH POETRY

Objectives

- To help students to be involved in intensive discussions of poetic texts, which would enable them enrich their skills to communicate, to relate the themes of the poetic texts to their real life.
- To provide the students with the components of English poetry in general and to familiarize them with the literary devices and terminology of English poetry.
- To memorize the whole poems or certain lines of the poems, which would help them build a innate sense of creativity.

UNIT-I

What Is Poetry?
Types of Poetry
Lyric Poetry
Elegy, Ode, Sonnet, Dramatic Monologue and Occasional poetry
Narrative Poetry
Epic, Mock-epic and Ballad
Descriptive and Didactic Poetry

UNIT-II

Prosodic Features: Metre and Rhythm
Metre - Accentual Metre, Syllabic Metre, Accentual-Syllabic Metre
Free Verse
Substitutions
Recitation
Rhythm
Pauses at the End of Lines, Pauses within Lines, Elisions and Expansions, Vowel Length and Consonant Clusters, Modulation
Rhyme
Alliteration, Assonance, Onomatopoeia

UNIT-III Poetic Devices

Consonance, Euphony, Allegory, Allusion, Ambiguity, Analogy, Connotation, Denotation, Euphemism, Point of View, Enjambment, Imagery, Symbol,

8. Practice: Ad-copy writing, Slogan, Headline, Ad Lay-out, Print Advertisement, Television
   Advertisement, Storyboard, Radio Advertisement

Unit V: Field Visits & Project

9. Print
10. Radio Station
11. Television Station
12. Project

Books

1. Keval, J. Kumar. Mass Communication in India. India: Jaico,1994.
2. Roy, Barun. Beginners' Guide to Journalism and Mass Communication. Delhi: Pustak Mahal, 2010.
3. Ahuja, B.K. Mass Media Communication. Delhi: Saurabh Publishing House, 2010.

References

Unit I

1. Natarajan. J. History of Indian Journalism .New Delhi: Ministry of Information and Broadcasting,1955.
2. Parthasarathi, Rangaswamy. Journalism in India. Indiana University: Sterling University, 2010.
3. Srivastava, K.M. News Reporting and Editing . New Delhi: Sterling Publishers, 1987

Unit II

4. Hall, Mark W. Broadcast Journalism: An Introduction to NewsWriting. Hastings: Hastings House, 1978
5. Abbot and Richard Lee Rider. Handbook of Broadcasting. California, McGraw-Hill, 1957
6. Bliss, Edward. News Writing for Broadcast. Columbia: Columbia University Press, 1994
7. Srivastava, K.M. 1987. Radio and Television: New Delhi: Sterling Publishers.

Unit III

8. Srivastava, K.M. 1987. Radio and Television: New Delhi: Sterling Publishers.

9. Yorke, Ivor. Television Journali sm. Manchester: Focal Press,1989.
10. Riber, John. Writing and Producing for Television and Film. New Delhi: Sage Publications, 2005.

Unit IV

11. Kumar J. Jeval. Advertising in India. New Delhi: Jaico Publishers, 2005
12. Jefkins, Frank. Advertising. New Delhi: Pearson, 2000
13. Mooji, Marieke De.Global Marketing and Advertising: Understanding Cultural Paradoxes: New Delhi: Sage, 2009.
14. Lee, Monle and Carla Johnson. Principles of Advertising. New York: Haworth Publications, 2005.

Unit V

15. Williams, Jack (Ed.). Illustrated Dictionary of Mass Communication. New Delhi: Lotus Press, 2009.

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Sem. III **Hours/Week: 4**
14PEN3112 **Credits: 3**

WOMEN'S WRITING

Objectives

- To familiarize the students with the present trend of feminist and post-feminist literature
- To enable the students to understand and appreciate women's writing

Unit-I:

Poetry (Detailed)

1. Kishwar Naheed(1940-) : The Grass is Really like me
2. Gabriela Mistral (1889-1957) : Death Sonnet I
3. Elizabeth Bishop (1911-1979) : Insomnia

Unit-II:

Poetry (Non-Detailed)

4. Anne Sexton (1928-1974) : In Celebration of my Uterus
5. Marina Tsvetaeva (1892-1941) : Psyche
6. Audre Lorde (1934-1992) : A Woman Speaks
7. Nellie Wong(1934-) : When I was growing up

Unit-III:

Prose (Detailed)

8. Mary Daly (1928-2010) : After the Death of God the Father: Women's Liberation and the Transformation of Christian Consciousness

Unit IV:

Drama (Detailed)

9. Adrienne Kennedy (1931-) : Funnyhouse of a Negro

Drama (Non-Detailed)

10. Manjula Padmanaban(1953-): Harvest

Unit V:

Fiction

11. Jhumpa Lahiri(1967-) : Interpreter of Maladies
12. Toni Morrison (1931-) : Beloved

Text Books

Unit-I

1. Dove, Rita. The Penguin Anthology of Twentieth- Century American Poetry. New York: Penguin Books, 2011.

Unit-II

2. Lorde, Audre. The Collected Poems of Audre Lorde. New York: WW Norton and Company, 2000.
3. Tsvetaeva, Marina. Dark Elderberry Branch: Poems of Marina Tsvetaeva. Maine: Alice James Books, 2012.

Unit-III

4. Daly, Mary. "After the Death of God the Father: Women's Liberation and the Transformation of Christian Consciousness". Modern Woman: The Lost Sex. New York: Harper Brothers, 1947.

Unit-IV

5. Kennedy, Adrienne. Funnyhouse of a Negro. New York: Samuel French, 1969.
6. Padmanaban, Manjula. Harvest. Michigan: Aurora Metro Press, 2003.

Unit-V

7. Lahiri, Jhumpa. Interpreter of Maladies. New York: Harper Collins Publications, 1999.
8. Morrison, Toni. Beloved. New York: Knopf Doubleday Publishing Group, 2007.

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Sem. III **Hours/Week: 4**
14PEN3203A **Credits: 4**

Core Elective-3A:

CONTEMPORARY INDIAN LITERATURES TRANSLATED INTO ENGLISH

Objective:

* To help the students get acquainted with Contemporary Indian Writers and to appreciate their works in English translation

UNIT-I: Poetry (Detailed)

Dr. Kalaignar M Karunanidhi:

1. In Search of Human Love
2. Social Outlook
3. Enmity Conquer We Shall!
4. Students' Awakening (Shower of Poetry (Volume I))

Azhagiya Periyavan:

1. The Word for you and Me (Translated by Meena Kandasamy)

Salma:

1. A Midnight Tale
2. Perspective
3. Evil
4. Home (Translated by Lakshmi Holmstrom)

Songs of Lalon Phokir: Who wants to go to the other shore? (Translated from Bengali by Carol Salomon)

UNIT-II Poetry (Non Detailed)

Joy Goswami: If You Must Ask Me (Translated from Bangla by Skye Lavin and Joy Goswami)

Khaled Hossain: Water Bird (Oliullah tried his whole life to become a poet) (Translated from Bangla by Shabnam Nadiya)

Sunil Gangopadhyay: This Hand Has Touched

Buddhadeva Bose:

1. The Moment of Creation
2. Now The Battle is against the World
3. Sonnets for 3 A.M.

UNIT-III Short Story (Detailed)

Ramanath Ray: Hero and Heroine (Translated from Bengali by Palash Baran Pal)

Sunil Gangopadhyay: The Trip to Heaven (Translated from Bengali by Indranil Dasgupta)

Short Story (Non Detailed)

Abhijit Sen:The Deceiver (Translated by Chhanda Chattopadhyay Bewtra)

Sirshendu Mukhopadhyay: Look at me (Translated from the original Bangla by Nilanjan Bhattacharya)

UNIT-IV Fiction

Dr. Kalaignar M. Karunanidhi: Ponnar Sankar (Translated by Barathiar University)

Bama Faustina: Vanmam: Vendetta (Translated by Malini Seshadri) Vairamuthu: Thaneer Thesam (Translated by Projectmadurai)

UNIT-V Fiction

Imayam: Arumugam (Translated by D Krishna Ayyar)

Krishna Sobti: Memory's Daughter (Translated by Menakshi Bharadwaj & Smita Bharti)

References

http://www.macmillaneducation.in/book/shower-poetry-volume-ii

http://www.museindia.com/

viewarticle.asp?myr=2006&issid=9&id=425

http://www.katha.org/site/

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Sem. III **Hours/Week: 4**

14PEN3203B **Credits: 4**

Core Elective-3B:

ENGLISH LANGUAGE TEACHING IN PRACTICE

Objectives

- To introduce students to various ways of teaching English as a second language
- To help students have hands-on experience in teaching

UNIT 1: Introduction to English Language Teaching

1. Reality of a Second-Language classroom
2. The Classroom Setting
3. Roles of a teacher
4. Teacher talk: traditional and Communicative
5. Teaching Practice

UNIT 2: Teaching Vocabulary, Grammar and Study Skills

6. Principles for Teaching Vocabulary, Grammarand Study Skills
7. Vocabulary Teaching Techniques
8. Teaching Grammar Communicatively
9. New ways of Teaching Study Skills
10. Teaching Practice

UNIT 3: Teaching Receptive and Productive Skills

11. Principles for Teaching Receptive and Productive Skills
12. Teaching Listening Skills
13. Teaching Speaking Skills
14. Teaching Reading and Writing Skills
15. Teaching Practice

UNIT 4: Teaching English through Literature

16. Principles for Teaching English through Literature
17. Creative use of Poetry
18. Using Short Stories
19. Using one-act Plays
20. Teaching Practice

UNIT 5: Using Technology in Teaching

21. Principles for using Technology to Teach Language

22. Using Language Software
23. Using Videos
24. Online Teaching
25. Teaching Practice

Text Books

UNIT 1:

1. Chaudron, C. (2009). second Language Classrooms: Research on Teaching and Learning. (First South Asian ed.). Cambridge: Cambridge University Press.
2. Freire, P. (1990). Pedagogy of the Oppressed. (4th ed.). (M.B. Ramos, Trans.). London: Penguin Books.

UNIT 2:

3. Ur, P. (1996). Grammar Practice Activities: A practical Guide for Teachers. (Low price ed.). Cambridge: Cambridge University Press.
4. Redman, S., Ellis, R., and Viney, B. (1996). A Way with Words: Resource Pack 1 and 2. Cambridge: Cambridge University Press.

UNIT 3:

5. Bilbrough, N. (2007). Dialogue Activities: Exploring Spoken Interaction in the Language Class. Cambridge: Cambridge University Press.
6. Brookes, A. and Grundy, P. (1998). Beginning to write. Cambridge: Cambridge University Press.

UNIT 4:

7. Lazar, G. (1993). Literature and Language Teaching. Cambridge: Cambridge University Press.

UNIT 5:

8. Tileston, D.W. (2004). What every Teacher should know about using Media and Technology. California: Corwin & Sage.

References

1. Chaudron, C. (1988). Second Language Classrooms. Cambridge: Cambridge University Press.
2. Nunan, D. (2003). Practical English Language Teaching. New York: McGraw-Hill.
3. Stern, H.H. (1992). Issues and Options in Language Teaching. Oxford: Oxford University Press.

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Sem. III **Hours/Week: 4**
14PEN3402 **Credits: 4**

IDC (BS):
SPOKEN ENGLISH

Objective

- To develop the students' speaking skills to enable them to use general, social and professional language.

Unit-I

1. The Organs of Speech
2. Description and Articulation of English Speech Sounds
3. Syllables and Stress (Weak Forms, Intonation)
4. Connected Speech

Unit II

5. Spelling and Pronunciation
6. International Phonetic Alphabet Transcription of Received Pronunciation of Words as per the Oxford Advanced Learners Dictionary of H.S. Hornby
7. Expressions
8. Sentence Construction

Unit-III

9. Common Conversational Structures
10. Idioms and Phrases
11. Intonation and Speed
12. Greeting and Introducing

Unit-IV

13. Practicing Short Dialogues
14. Group Discussions, Seminars/Paper-Presentations
15. Listening News/Conversations/Telephonic Conversation
16. Extempore

Unit-V

17. Debates
18. Interview
19. Presentation Skills
20. Public Speaking and Special Occasion Speeches

Textbooks (All Units)

1. Barker, Chris. Cultural Studies: Theory and Practice. 4th ed. New Delhi: Sage Publications India Pvt Ltd, 2012.
2. Lewis, Jeff. Cultural Studies: The Basics. 2nd ed. New Delhi: Sage Publications India Pvt Ltd, 2008.

References

1. Ogden, Daryl. Introduction to Cultural Studies. New York: Pearson Custom Publishing, 2000.
2. Ryan, Michael. Cultural Studies: A Practical Introduction. Chichester, UK: John Wiley & Sons Ltd, 2010.
3. During, Simon. Cultural Studies: A Critical Introduction. New York: Routledge, 2005.
4. Morag, Shiach. Feminism and Cultural Studies. Oxford: Oxford University Press, 1999.
5. Said, Edward. Culture and Imperialism. London: Vintage Books, 1994.

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Sem. IV **Hours/Week: 7**
14PEN4114 **Credits: 5**

MYTH IN LITERATURE

Objective

- To introduce the students to the study of myth and their recurrence in later social, historical, cultural and literary contexts
- To provide the students a gateway to the reception of mythical ideas and images in art and literary cultures

Unit I: Introduction to Myth

1. Definition of Myth
2. Origin of the Worlds, Origin of Gods, The Rule of Chronus, The War of Titans, Origin of Man
3. Periods: Archaic, Classical , Hellenistic , Roman or Imperial
4. Olympian Gods (Roman Equivalents are given in brackets)
   Zeus (Jupiter), Hera (Juno), Poseidon (Neptune), Demeter (Ceres), Hestia (Vesta), Aphrodite (Venus), Ares (Mars), Hephaestus (Vulcan), Apollon (Apollo), Artemis (Diana), Athena (Minerva), Hermes (Mercury), Dionysus (Bacchus)
5. Demigods and Heroes
   Myth in Literature

Unit-II (Poetry) Detailed

6. John Dryden: "Alexander's Feast"
7. Algernon Charles Swinburne: "The Garden of Proserphine"
8. William Wordsworth: "The World is too much with us"

Unit III: (Poetry) Non-Detailed

9. W. B. Yeats : Leda and the Swan
10. Keats: I stood tip-toe upon a Little Hill
11. PB Shelley: Adonais
12. William Shakespeare: Venus and Adonis
13. Alexander Pope: The Rape of the Lock

Unit IV: Myth in Literature (Play) Detailed

14. Percy Bysshe Shelley: Prometheus Unbound

Unit V: Novel

15. Mary Shelley: Frankenstein

16. Herman Melville: Billy Budd
17. Margaret George: Helen of Troy

References

1. Armstrong, Karen. A Short History of Myth. Toronto: Knopf, 2006. Print.
2. Frazer, James. The Golden Bough. New York: Macmillan, 1922. Print.
3. Graves, Robert. The Greek Myths. (1955, Cmb/Rep edition 1993) Penguin. Print.
4. Hamilton, Edith. Mythology (1942, New edition 1998). Back Bay Books. Print.
5. Segal, Robert. Myth: A Very Short Introduction. Oxford: Oxford UP, 2004. Print.
6. Hard, Robin. The Routledge Handbook of Greek Mythology London & NY: Routledge, 2004. Print.
7. Ovid. Metamorphoses (Trans.) A.D. Melville. Oxford: Oxford University Press, 1986. Print.
8. Hughes, Ted. Tales from Ovid London: F&F, 1997. Print.

Sem. IV **Hours/Week: 7**
14PEN4115 **Credits: 5**

CULTURAL STUDIES

Objectives

- To enable the students to comprehend the global trends in cultural studies
- To enable the students to master the theory and practice of cultural studies

Unit - I

1. An Introduction to Cultural Studies: (a) Definition of Culture (Lewis 18-22) and Cultural Studies (Barker 6-7), (b) The Birmingham Centre for Contemporary Cultural Studies, and (c) Frankfurt School (Lewis 65-68)
2. Meanings of the Key Concepts in Cultural Studies (Barker 7-12): (a) Culture and Signifying Practices: Language-Game, (b) Representation, (c) Cultural Materialism and Non-Reductionism: Political Economy, (d) Articulation, (e) Power, (f) Popular Culture: Ideology and Hegemony, (g) Texts and Readers (Active Audiences): Polysemy, (h) Anti-Essentialism: Subjectivity and Identity, and (i) Positionality

3. From British Cultural Studies to International Cultural Studies (Lewis 84-108): (a) Literary Foundations of Cultural Studies, (b) Culturalism and the Formation of a New Cultural Studies, (c) Internationalization of British Cultural Studies

Unit – II

4. Culture and the Social Formation: (a) Hegel's Dialectics and Marx's Materialism and Naturalism (Lewis 57-60), and (b) Marxism and the Metaphor of Base and Superstructure (Barker 55-58)
5. The Question of Ideology (Barker 62-74): (a) Marxism and False Consciousness, (b) Althusser and Ideology, (c) Antonio Gramsci, Ideology and Hegemony, (d) The Instability of Hegemony, and (e) The Problems of Hegemony and Ideology

Unit – III

6. Culture, Meaning, Knowledge: The Linguistic Turn in Cultural Studies (Barker 75-107):
   (a) Saussure and Semiotics
   (b) Roland Barthes and Mythology
   (c) Derrida: Textuality and Differance
   (d) Foucault: Discourse, Practice and Power
   (e) Post-Marxism and the Discursive Construction of the Social
   (f) Lacan: Language and Psychoanalysis
   (g) Wittgenstein and Rorty: Language as Use

Unit – IV

7. Popular Consumption and Youth Culture (Lewis 214-238)
8. Biology, the Body and Culture: (a) Biology and Culture (Barker 130-138), (b) The Body as Discourse (Lewis 251-254), and (c) Posthumanism (Barker 235-237) and Posthuman Bodies (Lewis 285-287)
9. Globalization: (a) Globalization, Race and Historical Imperialism (Lewis 293-297), (b) Multiculturalism (Lewis 298-301), and (c) Cultural Studies and Climatic Change (Barker 168-172)
10. Modernism and Culture (Barker 185-188), and Postmodern Culture (Barker 203-211)
11. Subjectivity and Identity (Barker 220-223): (a) Personhood as a Cultural Production, (b) Essentialism and Anti-Essentialism, (c) Self-Identity as a Project, and (d) Social Identities

Unit – V

12. Race and Ethnicity (Barker 252-257): (a) Racialization, (b) Different Racisms, (c) The Concept of Ethnicity, and (d) Ethnicity and Power
13. Feminism and Cultural Studies (Barker 289-294): (a) Patriarchy, Equality and Difference, (b) Liberal and Socialist Feminism, (c) Difference Feminism, (d) Black and Postcolonial Feminism, (e) Poststructuralist Feminism, and (f) Postfeminism
14. Media Culture: (a) Television Audiences and Cultural Identity (Barker 345-348), (b) Digital Media (Barker 362-364), and (c) Cyber-Sex and Electronic Eros (Lewis 356-360)
15. Cultural Studies and Cultural Politics (Barker 461-73)
16. Neo-Pragmatism and Cultural Studies (Barker 488-495)

Textbooks (All Units)

1. Barker, Chris. Cultural Studies: Theory and Practice. 4th ed. New Delhi: Sage Publications India Pvt Ltd, 2012.
2. Lewis, Jeff. Cultural Studies: The Basics. 2nd ed. New Delhi: Sage Publications India Pvt Ltd, 2008.

References

1. Ogden, Daryl. Introduction to Cultural Studies. New York: Pearson Custom Publishing, 2000.
2. Ryan, Michael. Cultural Studies: A Practical Introduction. Chichester, UK: John Wiley & Sons Ltd, 2010.
3. During, Simon. Cultural Studies: A Critical Introduction. New York: Routledge, 2005.
4. Morag, Shiach. Feminism and Cultural Studies. Oxford: Oxford University Press, 1999.
5. Said, Edward. Culture and Imperialism. London: Vintage Books, 1994.

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Sem. IV **Hours/Week: 7**
14PEN4116 **Credits: 4**

ENGLISH LITERATURE FOR COMPETITIVE EXAMINATIONS - NET/SET

Objectives

- To give a bird's eye view of English Literature to students
- To enable students to face NET/SET

UNIT-I: LIFE AND WORKS OF MAJOR AUTHORS

Chaucer, Christopher Marlowe, Ben Jonson, Shakespeare, Milton, Tennessee Williams, Oliver Goldsmith, John Steinbeck, Graham Greene, Thomas Hardy, Hawthorne, H.G. Wells, Harold Pinter, Mark Twain, George Eliot, George Orwell, Walter Scott, Margaret Atwood, Saul Bellow, Arnold Bennet, Aldous Huxley,T.S. Eliot, Charles Dickens, George Bernard Shaw, D.H. Lawrence, Eugene O' Neill, Rabindranath Tagore, Alice Walker.

UNIT – II: LITERARY FORMS AND TERMS

Lyric, Ode, Sonnet, Elegy, Idyll, Satire, Heroic Couplet, Terza Rima, Rhyme Royal, Soliloquy, Allegory, Blank Verse, Catharsis, Euphemism, Interludes, Metaphor, Objective Correlative, Onomatopoeia, Sprung Rhythm, Stream of Consciousness, Surrealism

UNIT – III: LITERARY CRITISM AND THEORIES

Criticism: Aristotle, Sydney, Dryden, Pope, T. S. Eliot and I.A. Richards Theories: Post-Modernism, Structuralism, Post Structuralism, Semiotics, Deconstruction, Feminism, Marxist Criticism, New Criticism, Eco Criticism, Gay Criticism.

UNIT – IV: IMPORTANT EVENTS AND MOVEMENTS

Aesthetic Movement, The Theatre of the Absurd, Angry Young Men, University Wits, Black Mountain School, The Cockney School, Confessional Poetry, Theatre of Cruelty, Graveyard Poets, Lake Poets, Metaphysical Poets: The Beats, Harlem Renaissance.

UNIT – V: MAJOR LITERARY CHARACTERS AND WELL KNOWN QUOTATIONS

Popular Quotations and well known characters from the works of Chaucer, Shakespeare and George Bernard Shaw – from the novels of Charles Dickens and D. H. Lawrence – from the essays of Bacon

Text Books All Units

1. Drabble, Margaret. The Oxford Companion to English Literature. Oxford: OUP, 2006.
2. Masih K. Ivan, et al . An Objective Approach to English Literature for NET, JRT, SLET and Pre-Ph.D. New Delhi: Atlantic Publishers, 2007.

References

3. Abrams, M.H. and Geoffrey Galt Harphan. A Handbook of Literary Terms. New Delhi: Cengage Learning, 2009.
4. Anderson, Robert and John Malcolm Brinnin. Ed. Elements of Literature. New York: Holt, Rinehart and Winston Inc., 1952.
5. Lodge, David . Ed. Modern Criticism and Theory: a Reader. Delhi: Pearson Education Ltd., 2004.
6. Ousby, Ian. The Wordsworth Companion to Literature in English. London: Wordsworth References, 1992.
7. Sampson, George. The Concise Cambridge History of English Literature. New Delhi: Cambridge University Press, 2004.
8. Thorpe, Edgar and Showick Thorpe. Objective English 3 Edition. New Delhi: Pearson, 2009.

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Sem. I **Hours/Week: 6**
14UEN130401A **Credits: 5**

Allied-1: SHORT STORY

Objectives

* To understand the genre of the short story.
* To understand and use discipline- specific terms used in literary and narrative analysis.
* To be able to analyze and interpret short story.

Unit-I

Definition of short story
Origin and development of short story
Elements of short story: Plot, Character
Setting
Points of View
Style
Theme

Unit-II (Detailed)

Leo Tolstoy (Russian)	:	How much Land does a man require?
Franz Kafka (German)	:	The Married Couple
Selma Lagelof (Swedish)	:	The Outlaws
Lord Dunsany (Irish)	:	Where the Tides Ebb and Flow

Unit-III (Non Detailed)

D.H.Lawrence (English)	:	The Blind Man
Joseph Conrad (English)	:	The Black Mate
Richard Hughes (Wales)	:	Martha
O. Henry (U.S.A)	:	Fox in the Morning

Unit-IV Indian (Detailed)

Rabindranath Tagore	:	My Lord, the Baby
R.K. Narayan	:	A Snake in the Grass
	:	Under the Banyan Tree
S. Raja Ratnam	:	Drought

Unit-V (Non Detailed)

P'u Sung-Ling (Chinese)	:	The Princess Lily
Traditional (Arabian)	:	The Story of the Magic Horse
Traditional (Japanese)	:	The Tongue-Cut Sparrow
Olive Schreiner (S.African)	:	The Buddhist Priest's Wife

References

1. Selected Short Stories of the World. Maples Press, 2010. Print.
2. Narayan, R.K. Under the Banyan Tree & Other Stories. Indian Thought Publications, 1992. Print.
3. Contemporary American Short Stories. Maple Press, 2009. Print.

Sem. IV **Hours/Week: 4**
14UEN430210 **Credits: 2**

Core-10: HISTORY OF LITERARY CRITICISM-I

Objectives

- To enable the students to understand the literary critical thought down the ages.
- To make the students learn the type of criticism that influenced the respective ages.

UNIT-I: THE GREEK CRITICS

1. Plato (427-348 B.C.): His View of Art; Attack on Poetry; the Function of Poetry; Comments on Drama
2. Aristotle (384-322 B.C.): His Observations on Poetry, Tragedy and Comedy

UNIT-II: THE ROMAN CRITICS

3. Horace (65B.C. - ? B. C.): His Observations on Poetry and Drama
4. Quintilian (35-95 A.D.): General Observations on Style; His Theory of Style

UNIT-III: THE ROMAN CRITICS

5. Longinus (1 AD. OR 3 AD.?): The Five Sources of the Sublime
6. Dante (1265-1321): The Requirements of an Illustrious Vernacular

UNIT-IV: THE CLASSICAL ENGLISH CRITICS

7. Sir Philip Sidney (1554-1586): The Argument of his Book Apologie for Poetrie: Stephen Gosson's Charges against Poetry, and Sidney's Defense of Poetry.
8. Ben Jonson (1573-1637): The Five Qualifications of a Poet

UNIT-V: THE NEOCLASSICAL ENGLISH CRITICS

9. John Dryden (1631-1700): The Nature of Poetry; the Function of Poetry; Dramatic Poetry; His Views on Tragedy, Comedy, Epic and Satire.
10. Joseph Addison (1672-1719): True and False Wit; the Pleasures of the Imagination.

TEXT BOOK FOR ALL THE UNITS:

1. Prasad, Birjadish. An Introduction to English Criticism. New Delhi: Macmillan India Ltd., 1965.

REFERENCES

1. Atkins, J.W.H. English Literary Criticism. Vol. 1. Jaipur (India): Surabhi Publications, 1999.
2. Danzier and Johnson. An Introduction to Literary Criticism. Boston: Heath, 1961.
3. Das, B.B. and Jatindra Mohan Mohanty. Eds. Literary Criticism: A Reading. New Delhi: Oxford University Press, 1985.
4. Habib, Rafey. A History of Literary Criticism: From Plato to the Present. Malden: Blackwell Publishing Ltd, 2005.
5. Wellek, Rene. A History of Modern Criticism 1750-1950: The Romantic Age. Cambridge: Cambridge University Press, 1981.
6. Wimsatt, William K., and Cleanth Brooks. Literary Criticism: A Short History. Calcutta: Oxford Book Company, 1957.

Sem. IV **Hours/Week: 3**
14UEN430211 **Credits: 3**

Core-11: COMPARATIVE LITERATURE AND TRANSLATION STUDIES

Objectives

* To introduce students to the theories and practice of Comparative Literature and Translation Studies.
* To empower students with the acumen of translation skills.

Unit 1

Definition, origin and Scope of Comparative Literature – Concepts of Comparative Literature Comparing Literature of the British Isles – Comparative Identities and Post-Colonial World

Unit 2

Constructing Cultures: The politics of Travelers Tales Gender and Thematics.

Unit 3

From Comparative Literature to Translation Studies Kinds and problems of Translation Translation and Creative Writing

Unit 4

Translation as Linguistic Bridge Building - Nation Building
Limits of Translation – Role of Translator – A critique of Translation Theories.

Unit 5

Translation – Theory and Practice: Indian Context & Global Context.
Elango and Shakespeare as Tragedians: Dr. Chellapan.

Textbooks

Unit 1, 2 & 3

1. Das, Bijay Kumar. (2000). Comparative Literature. Atlantic Publishers & Distributers: Delhi.

Unit 4 & 5

2. Das, Bijay Kumar. (2005). A Hand Book of Translation Studies. Atlantic Publishers & Distributors: Delhi.

References

1. Bassnett, Susan. (1993). Comparative Literature: A Critical Introduction. Willy John & Sons: London.
2. Frazen, Claudio Guillen Cola. (2010). The Challenge of Comparative Literature.Harvard University Press: Harvard.
3. Newton, P. Stalknecht and Horst Frenz (Ed). (1961). Comparative Literature: Method and Perspective. University of South Illionis Press: Illionos.
4. Weisstein, Ulrich. (1973). Comparative Literature and Literary Theory: Survey and Introduction. Indiana University Press.
5. Wellek, Rene and Austin Warren. (1942). Theory of Literature. Brace and world Inc: New York.
6. Prawer S.S. (1973). Comparative Literature Studies: An Introduction. Duckworth: London.
7. Gifford, Henry. (1969). Comparative Literature. Routledge Kegan Paul: London.
8. Levin, Harry. (1972). Ground for Comparison. Massachusetts: Cambridge.

Sem. IV **Hours/Week: 6**
14UEN430404A **Credits: 5**

Allied-IV: INDIAN DIASPORIC LITERATURE

Objectives

* To expose the Diasporic life and experience to the students.
* To enable the students to know the richness and variety of Diasporic literature.

Unit-I: Diaspora & Indian Writing in English

1. Definition of the terms "Diaspora"– Birth of Diasporic Literature – Colonialism and Diaspora –Classification of "Diaspora"
2. Indian Diaspora and its classification - Members of Indian Diaspora - Definition of the term "Indian English Literature" – History of Indian English Literature

Unit-II: Poetry (Detailed)

3. A. K. Ramanujan(1929 -): History: Entries for a catalogue of Fears.
4. Vikram Seth (1952 -): The Frog and the Nightingale
5. Saleem Peeradina (1967): Slow Dance

Unit-III: Poetry (Non-Detailed)

6. Dom Moraes (1938 –2004) : Absences
7. Meena Alexander (1951-) : Cosmopolitan
8. Adil Jussawalla(1940 -) : Geneva
9. Jerry Pinto(1966 -) : The Quiet Rebellion Of Paper

Unit-IV: Short Story (Non-Detailed)

10. Jhumpa Lahiri(1967-) : Interpreter of Maladies(1999)

Unit-V: Novel (Detailed)

11. V.S. Naipaul (1932-) : A House for Mr. Biswas(1961)
12. Rohinton Mistry (1952-): A Fine Balance (1995)

Text Books

Unit-I

1. John, B. Alphonso - Karkala. Indo- English Literature in the Nineteenth Century. Mysore, 1970.

Unit-II & III

2. Peeradina, Saleem. Ed. Contemporary Indian Poetry in English: An Assessment and Selection. Chennai: Macmillan Pub. Pvt. Ltd. 2010.

Unit-IV

3. Lahiri, Jhumpa . Interpreter of maladies: stories. New York: Houghton Mifflin Harcourt, 1999.
4. Naipaul, V S. A House for Mr. Biswas. United Kingdom: Penguin Books Ltd, 1969.
5. Mistry, Rohinton: A Fine Balance. Oprah's Book Club.

Reference Books

1. Natarajan, Nalini. Handbook of twentieth-century literatures of India. Delhi: Greenwood Publishing Group, 1996.
2. Lal, Brij Vilash. The Encyclopedia of the Indian Diaspora. Delhi: Oxford University Press, 2006.
3. Singh, Jaspal K, Chetty and Rajendra. Eds. Transnationalisms and Diasporas. Delhi: Oxford. 2010.
4. Jain, Jasbir. Writers of the Indian Diaspora. Delhi: Rawat Publications, 2003.
5. Ramakrishna, D. Critical Essays on Indian English Writing. Delhi: Atlantic Publishers & Distributors, 2005.
6. Ralph J. Radhika Crane. Shifting Continents/Colliding Cultures: Diaspora Writing of the Indian Subcontinent.Delhi: Rodopi Bv Editions, 2000.

Sem. V **Hours/Week: 5**
14UEN530213 **Credits: 3**

Core-13: HISTORY OF LITERARY CRITICISM-II

Objectives

- To enable the students to understand the literary critical thought down the ages.
- To make the students learn the type of criticism that influenced the respective ages.

UNIT-I: THE NEOCLASSICAL ENGLISH CRITICS

1. Alexander Pope (1688-1744): His Classicism; On the Function of Criticism.
2. Dr. Johnson (1709-1784): His Historical Approach; On the Kinds of Poetry, Versification, and Poetic diction; On Drama.

UNIT-II: THE ROMANTIC CRITICS

3. William Wordsworth (1770-1850): His Concept of Poetic Diction; His Concept of Poetry.
4. S.T. Coleridge (1772-1834): His Theory of Imagination; His Definition of a Poem; On Poetic Diction; On Dramatic Illusion (Willing Suspension of Disbelief).

UNIT-III: THE VICTORIAN CRITICS

5. Matthew Arnold (1822-1888): His Criticism on Poetry; On Criticism
6. Walter Pater (1839-1894): His Views on Literature, and on Criticism

UNIT-IV: THE NEW CRITICS

7. T.S. Eliot (1888-1965): Impersonality of Poetry; Objective Correlative and Dissociation of Sensibility

UNIT-V: THE NEW CRITICS

8. I.A. Richards (1893-1979): His views on Two Uses of Language; Four Kinds of Meaning: Sense, Feeling, Tone and Intention
9. F.R. Leavis (1895-1978): His Conception of the Business of Criticism

TEXT BOOK FOR ALL THE UNITS

1. Prasad, Birjadish. An Introduction to English Criticism. New Delhi: Macmillan India Ltd., 1965. Print.

REFERENCES

1. Atkins, J.W.H. English Literary Criticism. Vol. 1. Jaipur (India): Surabhi Publications, 1999. Print.

2. Danzier and Johnson. An Introduction to Literary Criticism. Boston: Heath, 1961. Print.
3. Das, B.B. and Jatindra Mohan Mohanty. Eds. Literary Criticism: A Reading. New Delhi: Oxford University Press, 1985. Print.
4. Habib, Rafey. A History of Literary Criticism: From Plato to the Present. Malden: Blackwell Publishing Ltd, 2005. Print.
5. Wellek, Rene. A History of Modern Criticism 1750-1950: The Romantic Age. Cambridge: Cambridge University Press, 1981. Print.
6. Wimsatt, William K., and Cleanth Brooks. Literary Criticism: A Short History. Calcutta: Oxford Book Company, 1957. Print.

Sem. V **Hours/Week: 5**
14UEN530215 **Credits: 3**

Core-15: WOMEN'S WRITING IN ENGLISH

Objectives

- To introduce students to, and/or expand their knowledge of the range and long history of women's writing across the world.
- To expand students' knowledge about the relation between gender, sexuality and nationalism in each of the selected readings.
- To expand students' critical vocabulary about representation, identity and nationalism.
- To expand students' ability to think, speak and write critically about the collective term 'women'

UNIT-I (POETRY) (Non Detailed)

Song Yu (3 C BCE) (Chinese): "Ow, Mama!"

Carol Ann Duffy (1955-) (Scottish): "Mrs. Aesop"

Maya Angelou (1928-) (American): "Woman Work", "Phenomenal Woman"

Carol Shields (1935-2003) (Canadian): "Wedding"

Amrita Pritam (1919-2005) (Indian): "A Letter", "Empty Space"

Viola Allo (African): "Hunger Flew With Me from Cameroon"

Anna Akhmátova (1889-1966): "Lot's Wife", (Russian) "Everything"

Rong Rong (1944-) (Chinese): "Cliché"

UNIT-II (Poetry) (Non-Detailed)

Marianne Moore (1887-1972) (American):"Marriage"

Sylvia Plath (1932-1963) (American): "Lady Lazarus", "Daddy"

Marge Piercy (1936-) (American): "Rape Poem", "Right to Life"

Margaret Christakos (1962-) :"The Lovely Figure" (Canadian)

Katherine Mansfield (1888-1923): "Country Women", (New Zealand) "Voices in the Air"

UNIT-III (SHORT STORIES) (Detailed)

Joyce Carol Oates (1938-) (American) : "Where Are You Going, Where Have You Been?"

Angela Carter (1940-1992) (English): "The Company of Wolves"

Mrinal Pande (1946-) (Indian): "Bitch"

Sujata Bhatt (1856-) (Indian): "Status"

Amrita Pritam (1919-2005)(Indian): "Wild Flower"

UNIT-IV (Non-Fiction) (Non Detailed)

Florence Nightingale (1820-1910) (English): Cassandra (1852)

Christa Wolf (1929- 2011) (German) : Cassandra (1984)

Toni Morrison (1931-) (African): "The Bird in Our Hand: Is It Living or Dead?" (Nobel Prize Acceptance Speech)

UNIT-V (NOVEL) (Non Detailed)

Tehmina Durrani (1953-) (Pakistani): Blasphem (1998)

Buchi Emecheta (1944-) (Nigerian): The Bride Price (1976)

Kavita Daswani (1971-) (Indian-American): For Matrimonial Purposes (2003)

REFERENCES

1. Cornillon, Susan Koppelman. Ed. Images of Women in Fiction: Feminist Perspectives. Bowling Green, Ohio: Bowling Green University Popular Press, 1972. Print.
2. Coward, Rosalind. Female Desire: Women's Sexuality Today. London: Paladin, 1984. Print.
3. Emecheta, Buchi. The Bride Price. George Braziller Incorporated, 2014. Print.
4. Fisher, Jerilyn and Ellen S. Silber (Eds). Women in Literature: Reading through the Lens of Gender.Greenwood Publishing Group. Print.
5. Gilbert, Sandra and Susan Gubar (Eds). The Norton Anthology of Literature by Women: The Traditions in English. New York and London: Norton, 1996. Print.
6. Markandaya, Kamala. Nectar in a Sieve. UK: Penguin. Print.
7. Nightingale, Florence. Cassandra: An Essay. Feminist Press, 1979. Print.
8. Sage, Lorna. Cambridge Companion to Women's writing in English. Australia: CUP, 1999. Print.

9. Showalter, Elaine. A Literature of Their Own. London: Virago, 1978. Print.
10. Wolf, Christa. Cassandra: A Novel and Four Essays. Farrar, Straus and Giroux, 1988. Print.
11. Wollstonecraft, Mary. A Vindication of the Rights of Women, London: Norton, 1988. Print.
12. http://classiclit.about.com/library/bl-etexts/
13. http://www.poets.org/poet.php
14. http://mostlyfiction.com
15. http://www.famouspoetsandpoems.com
16. http://www.nobelprize.org/nobel_prizes/peace/laureates/

Sem. V **Hours/Week: 4**
14UEN530302A **Credits: 4**

Core Elective (WS):
ENGLISH FOR TOURISM

Objectives

- To understand the concept of Tourism
- To study the cultural resources like temples, archaeological monuments, etc…
- To develop practical skills in travel formalities
- To develop skills in guiding the tourists
- To provide experience on Front office Management

Unit-1

1. Scope of tourism-concept of tourism-meaning- definition- forms. Explaining different types of tourism-leisure, pilgrimage, educational, business tour- growth and development of tourism in India.

Unit-2

2. Study of travel formalities: (passport-visa and its types and importance and other documents-types of tour operators.
3. Explaining different types of transportations- tourism and accommodations (hotels, youth hostels, choultries and dharmasalas etc.

Unit -3

1. Explaining Architectural heritage of India: (Hindu Temple Architecture- Dravida- Buddhist- Chaitya- Mugahal- Sultans- etc…
2. Explaining the Performing Arts: (Music- Hindustani- Carnatic and Folk Music) Dance and Drama:(Classical and Folk Arts- Bharatham, Katak, Kathakali, Kuccipudi, Maanipuri- Folk Dances of India.

Unit-4

1. Explaining Natural Tourism Resources: Wild-Life Sanctuaries- National Parks and Gardens- Mountains and Hill Resorts- Desert, Beaches- Island Tourism- Adventure Tourism: Trekking, Mountaineering, Safaries, Risk based activities, etc…

Unit-5

1. Preparing – Organization chart- Reservation systems- Registration formalities- Tariff of rooms- check in and check out procedures- modes of settling guest bill- room occupancy report.

2. Catering: Food and Beverage Service outlets- different types of Food Service Restaurant Organization. Types of menus- factors in menu planning.

Text books

1. Bhatia, A. K., 'Tourism Development, Principles and Practice', New Delhi, 1983. (Unit-1)
2. Devanesan, A. Principles of Tourism, Renupublication, Madhandam, 2005. (Unit-2)
3. Srinivasan. K. R., Temples of South India. (Unit-4)
4. Kishor, Dances of India. (Unit-3)
5. Manoj Dhas, India & Tourist Paradise. (Unit-5)

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Sem. V **Hours/Week: 2**
14UEN540601 **Credits: 2**

Core Elective (BS): FILM STUDIES

Objectives

- To introduce to the students the significance of Cinema as a medium of Mass Communication and Social Transformation.
- To help the students develop critical knowledge of the origin and development of Cinema with aesthetic understanding.
- To enthuse the students to review and appreciate films.

Unit-I: History of Cinema

Early Cinema – The Pioneers: Lumiere Brothers, Edison Melies, Griffith – Silent Period Indian Cinema – The Beginnings – Phalke - Holywood Cinema.

Unit-II: Basics of Cinema

The Shot; Definitions and types – The Camera – Movements and point of view – sound - editing

Unit-III: Development of Cinema in Europe and America

Technological development – technical development - aesthetic development – Film Genre – Neo-Realism (Italy) - Expressionism (Germany) – new wave (French) – Montage (Soviet) Documentary movement in Britain – contemporary film movement.

Unit-IV: Development of Indian Cinema

Development of cinema – Silent Era – Regional Cinema – Cinema censorship – cinema and national movement – Development of cinema after Independence – New Wave movement (80s and 90s) – Contemporary cinema – cinema and globalization. Documentary in India.

Unit-V: Film Review

Review of different Film genres

Submission of a mini project

Text Books

1. Film, An International History of the Medium by Robert Sklar – 2nd Edition, Prentice Hall, 2000.
2. An Introduction to World Cinema by Aristides Gazetas – McFarland & Company, Inc, 2000.

Reference Books

1. Bordwell David, Thompson Kristin – Film Art an Introduction, Mc Graw Hill, 1979.
2. Hayward Susan – Key Concepts in Cinema Studies, Routledge, London, 2004.

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Sem. VI **Hours/Week: 6**
14UEN630216 **Credits: 3**

Core-16: BRITISH NOVEL-II

Objectives

- To make students aware of the social problems from the themes of the novels in English.
- To train students in the simple literary discipline of sustained reading of prose writing of considerable length

Unit I: Detailed

Henry James: Daisy Miller

Unit II: Detailed

Virginia Woolf: To the Light House

Unit III: Non-Detailed

George Orwell : The Animal Farm

Unit IV: Detailed

Graham Greene : The Power and the Glory

Unit V: Non-Detailed

William Golding: Lord of the Flies

Text Books

Unit-I

1. James, Henry. Daisy Miller. New Delhi: Rupa Classics, 2005.

Unit-II

2. Woolf, Virginia. To the Light House. New Delhi: Rupa Classics, 2006.

Unit-III

3. Orwell, George. Animal Farm. New Delhi: Penguin India book Pvt.Ltd, 1987.

Unit-IV

4. Greene, Graham. The Power and the Glory. New York: Penguin Classics, 1991.

Unit - V

5. Golding, William. Lord of the Flies. New York: Faber and Faber, 1999.

Sem. VI **Hours/Week: 4**
14UEN630303A **Credits: 4**

Core Elective (WD): ENGLISH FOR BPOS

Objectives

* To develop the students' speaking skills to enable them to work in Bpos.

Unit-I:

Vocabulary Development

1. Introduction to BPO
2. Word building
3. Formation of words in context
4. Idioms and phrases
5. Common mistakes in English
6. American Vocabulary

Unit-II:

Pronunciation

7. Emphasis on syllables in words
8. Emphasis on words in sentences
9. Importance of Modulation
10. Reading aloud to help pronunciation
11. Speed and accuracy
12. Accent (American and English)
13. Tongue Twisters

Unit-III:

Script writing

14. Letters of Enquiry, Complaint
15. Reports
16. e-mail
17. Memos
18. Expansion of Ideas
19. Composing Messages(mobiles)

Unit-IV:

Customer Service and Sales Technique

20. Clarity
21. Oral, written, Body language
22. Listening to Presentations, Listening to Radio
23. Listening to model CDs.
24. Making customer understand
25. Understanding the customer

Unit-V:

Telephone Etiquettes

26. Greeting and introducing
27. Common Communication styles, Group Communication
28. Practising Short Dialogues
29. Telephone etiquettes, Confidence over phone
30. Call/ Telephone handling
31. Inbound/ Outbound calling

References

1. Ward, Frank Earl. English for Communication. 5th ed. New York: Macmillan, 2000. Print.
2. Flinders, Steve, Simon Sweeney, and Nick Brieger. Business English. London: Penguin, 1996. Print.
3. Kim, Seung Hee. Readings in International Business. Lanham: University of America, 1997. Print.

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Sem. VI **Hours/Week: 4**
14UEN630303B **Credits: 4**

Core Elective (WD): ENGLISH FOR TET

Objectives

- To teach students English Grammar in order to clear competitive examinations.
- To equip them with written skills and reading skills.

Unit - I

1. The Sentence and its kinds
2. Parts of speech
3. Tenses

Unit - II

4. Active and passive voice
5. Sentences: Simple, Compound and Complex Sentence
6. Irregular Verbs

Unit - III

7. Abbreviations of parts of speech
8. Sentence Pattern
9. Question tag

Unit - IV

10. Degrees of Comparison
11. Infinitive ,Gerund and Participle
12. Direct and Indirect Speech

Unit – V

13. Idioms and Phrases
14. Reading comprehension
15. Spotting errors

References

1. R.P. Bhatnagar, Rajulbhargava. English for Competitive Examinations. New Delhi: Macmillan Publishers, 1989.
2. Prasad, H.M. Objective English for Competitive Examinations. New Delhi: Tata Mc Graw Hill, 2008.
3. Wren, P.C. & Martin, H. High School English Grammar and Composition. New Delhi: S.Chand, 2010.

Sem. VI **Hours/Week: 4**
14UEN630304B **Credits: 4**

Core Elective (WD):
BASICS OF THEATRE ARTS

Objectives

- To develop an understanding of the nature and process of theatre.

Unit-I

1. Brief history of the development of Theatre
2. Terms and Concepts in Indian Theatre
3. Elements of Drama
4. Creative process in Drama

Unit-II

5. Speech and gestures
6. Dialogues
7. Mime and puppets
8. Story developing and Script-writing

Unit-III

9. Choreography
10. Costumes and mask designing
11. Stage – setting, props and background
12. Sound and Lighting

Unit-IV

13. Music
14. Directing
15. Singing
16. Acting, dancing and performing

Unit-V

17. Improvising in a variety of situations
18. Analyzing and interpreting scripts

19. Appreciation of theatre
20. Viewing, discussing, analyzing and evaluating theatrical events

Reference Books

1. Pickard, Frank. Theatre Arts: Fundamental Theory & Practice. Dubuque, IA: Kenall-Hunt Pub., 2009. Print.
2. Caltagirone, Dennis, and Joan Moran. Theatre Arts: The Dynamics of Acting. Lincolnwood, Ill., USA: National Textbook, 1997. Print.
3. Theatre Arts: Framework for Grades 7-12. Austin, TX: Texas Education Agency, 1980. Print.

Sem. I **Hours/Week: 5**
14UGE120101 **Credits: 3**

GENERAL ENGLISH-I

Objectives

To help students

* Use words and phrases related to self, home, friends and relatives in meaningful contexts.
* Use language to perform basic functions like describing, clarifying, suggesting, and giving directions.

Unit-1

01. Personal Details
02. Positive Qualities
03. Listening to Positive Qualities
04. Relating and Grading Qualities
05. My Ambition
06. Abilities and Skills
07. Self-Improvement Word Grid
08. What am I doing?
09. What was I doing?
10. Unscramble the Past Actions
11. What did I do yesterday?

Unit-2

12. Body Parts
13. Actions and Body Parts
14. Value of Life
15. Describing Self
16. Home Word Grid
17. Unscramble Building Types
18. Plural Form of Naming Words
19. Irregular Plural Forms
20. Plural Naming Words Practice
21. Whose Words?

Unit -3

22. Plural Forms of Action Words
23. Present Positive Actions
24. Present Negative Actions
25. Un/Countable Naming Words
26. Recognition of Vowel Sounds
27. Indefinite Articles

28. Un/Countable Practice
29. Listen and Match the Visual
30. Letter Spell - Check
31. Drafting Letter

Unit 4

32. Friendship Word Grid
33. Friends' Details
34. Guess the Favourites
35. Guess Your Friend
36. Friends as Guests
37. Introducing Friends
38. What are We Doing?
39. What is (s)he / are they Doing?
40. Yes / No Question
41. What was s/he doing?
42. Names and Actions
43. True Friendship
44. Know your Friends
45. Giving Advice/Suggestions
46. Discussion on Friendship
47. My Best Friend

Unit 5

48. Kinship Words
49. The Odd One Out
50. My Family Tree
51. Little Boy's Request
52. Occasions for Message
53. Words denoting Place
54. Words denoting Movement
55. Phrases for Giving Directions
56. Find the Destination
57. Giving Directions Practice
58. SMS Language
59. Converting SMS
60. Writing Short Messages
61. Sending SMS
62. The family debate
63. Family Today

Textbook

1. Joy, J.L. & Peter, F.M. (2014). *Let's Communicate*, New Delhi, Trinity Press.

SEM-II Hours/week: 5
14UGE220102 Credits: 3

GENERAL ENGLISH-II

Objectives

To help students

* Use words and phrases related to education, entertainment, career, and society in meaningful contexts.
* Use language to perform basic functions like comparing, debating, and storytelling.

Unit 1

01. Education Word Grid.
02. Reading Problems and Solutions.
03. Syllabification.
04. Forms for Expressing Quality.
05. Expressing Comparison.
06. Monosyllabic Comparison.
07. Di/polysyllabic Comparison.
08. The best monosyllablic Comparision
09. The best di/polysyllabic Comparision.
10. Practising Quality Words.

Unit 2

11. Wh Words
12. Yes/No Recollection
13. Unscramble Wh Questions
14. Wh Practice
15. Education and the Poor
16. Controlled Role play
17. Debate on Education
18. Education in the Future
19. Entertainment Word Grid
20. Classify Entertainment Wordlist
21. Guess the Missing Letter
22 Proverb-Visual Description
23. Supply Wh Words
24. Rearrange Questions
25. Information Gap Questions

Unit 3

26. Asking Quetions
27. More about Actions
28. More about Actions and Uses

29. Crime Puzzle
30. Possessive Quiz
31. Humourous News Report
32. Debate on Media and Politics
33. Best Entertainment Source

Unit 4

34. Career Word Grid
35. Job-Related Wordlist
36. Who's Who?
37. People at Work
38. Humour at Workplace
39. Profession in Context
40. Functions and Expressions
41. Transition Fill-in
42. Transition Sord Selection
43. Professional Qualities
44. Job Procedures
45. Preparing a Resume
46. Interview Questions
47. Job Cover Letter Format
49. E-mailing an Application
50. Mock Interview

Unit 5

51. Society Word Grid
52. Classify Society Wordlist
53. Rearrange the Story
54. Storytelling
55. Story Cluster
56. Words Denoting Time
57. Expressing Time
58. What Can You Buy?
59. Noise Pollution
60. Positive News Headlines
61. Negative News Headlines
62. Matching Conditions
63. What Whould You Do?
64 If I were the Prime Minister
65. My Dream Country

Textbook

1. Joy, J.L. & Peter, F.M. (2014). Let's Communicate, New Delhi: Trinity Prss.

SEM-III Hours/week: 5
14UGE320103 Credits: 3

GENERAL ENGLISH-III

Objectives:

* To enable the students to comprehend the local and global issues through the lessons.
* To enable the students to do the tasks centering on Skill Development and Grammar.
* To empower the students with interactive skills.

Tasks Designed for Each Unit	Skills Focused to be Developed for Each Unit	Hours Allotted
1. Pre-reading Task	Listening and Reading Skills through teacher-led reading practice	2 Hours
2. Objectives	Listening and Reading Skills	
3. Text	Listening and Reading Skills through teacher-led reading practice	
4. Glossary (Using Words and Phrases in Sentences)	Referring and Language Using Skills	2 Hours
5. Reading Comprehension	Reading, Speaking, and Writing Skills	1 Hour
6. Critical Analysis	Critical Thinking and Speaking Skills	2 Hours
7. Creative Task	Creative Thinking and Speaking Skills	2 Hours
8. General Writing Skills	Writing Skill	1 Hour
9. Activities on Grammar	Grammar Using and Writing Skills	2 Hours

UNIT I

* Suggestions to Develop Your Reading Habit 12 Hrs
  Grammar: Simple Present Tense

UNIT II

* The Secret of Success: An Anecdote 12 Hrs
  Grammar: Present Continuous Tense

UNIT III

* Hygiene 12 Hrs
  Grammar: Simple Past Tense

UNIT IV

* Dr. A.P.J. Abdul Kalam: A Short Biography 12 Hrs
  Grammar: Past Continuous Tense

UNIT V:

* "Golden Rule":A Poem 12 Hrs
  Grammar: Simple Future Tense & Future Continuous Tense

Textbook:

1. Jayraj, S. Joseph Arul et al. (2014). Trend-Setter:An Interactive General English Textbook for Under Graduate Students, New Delhi, Trinity.

SEM-IV **Hours/week: 5**
14UGE420104 **Credits: 3**

GENERAL ENGLISH-IV

Objectives:

* To enable the students to comprehend the local and global issues through the lessons.
* To enable the students to do the tasks centering on Skill Development and Grammar.
* To empower the students with interactive skills.

Tasks Designed for Each Unit	Skills Focused to be Developed for Each Unit	Hours Allotted
1. Pre-reading Task	Listening and Reading Skills through teacher-led reading practice	2 Hours
2. Objectives	Listening and Reading Skills	
3. Text	Listening and Reading Skills through teacher-led reading practice	
4. Glossary (Using Words and Phrases in Sentences)	Referring and Language Using Skills	2 Hours
5. Reading Comprehension	Reading, Speaking, and Writing Skills	1 Hour
6. Critical Analysis	Critical Thinking and Speaking Skills	2 Hours
7. Creative Task	Creative Thinking and Speaking Skills	2 Hours
8. General Writing Skills	Writing Skill	1 Hour
9. Activities on Grammar	Grammar Using and Writing Skills	2 Hours

UNIT-I: Women through the Eyes of Media **12 Hrs**

Grammar: Present Perfect Tense

UNIT-II: Effects of Tobacco Smoking **12 Hrs**

Grammar: Present Perfect Continuous Tense

UNIT-III: The Impact of Liquor Consumption on the Society **12 Hrs**

Grammar: Past Perfect Tense

UNIT-IV: An Engineer Kills Self as Crow Sat on his Head: A News Paper Report **12 Hrs**

Grammar: Past Perfect Continuous Tense

UNIT-V: Traffic Rules **12 Hrs**

Grammar: Future Perfect Tense & Future Perfect Continuous Tense

Text Book:

Jayraj, S. Joseph Arul. et al. (2014). Trend-Setter: An Interactive General English Textbook for Under Graduate Students. New Delhi, Trinity.

Sem. IV **Hours/Week: 4**
14PHR4402 **Credits: 4**

IDC:

ORGANISATIONAL BEHAVIOUR

Objectives

- To grasp the organizational theories that would enlighten the understanding of human behavior at work.
- To understand team/group processes and to be able to address issues arising from individual and collective organizational behavior.

UNIT 1: BASIC BEHAVIOURAL CONCEPTS (8 Hrs)

Organisational Behaviour - Concept, meaning, objectives, approaches, S-O-B-C Models, Models of OB. Historical development of OB - Hawthorne Experiments. Organisational Climate - Meaning, importance, determinants, and measurements.

UNIT 2: BEHAVIOUR DETERMINANTS (8 Hrs)

Personality - concept, meaning, determinants. Perception - meaning, factors, process, Difference between perception and sensation. Motivational Theories: Content, Contextual and Contemporary theories.

UNIT 3: BEHAVIOUR MODIFICATION (8 Hrs)

B.M: Concept, meaning, application and importance. Stress: Sources and Causes, Stress Management. Work place emotions, Conflict: meaning, types, Models and Resolution Strategy.

UNIT 4: ORGANISATIONAL TEAM DYNAMICS (8 Hrs)

Team: Types, designs, development, norms, roles and cohesiveness.
Team building: Process, types, managing team process.
Self Identity Team skills.

UNIT 5: ORGANISATIONAL CHANGE (8 Hrs)

Challenges of change - Pressures for change, types of change, approaches. Resistance to change - individual, group and organizational. Overcoming Resistance. Promoting change - interpersonal, team and organizational methods.

Text Books

1. Davis & Newstrom, (1985), Organisational Behaviour, New Delhi, McGraw Hill Publishers, (Unit Chapter - 2.
2. Fred Luthans, (1985), Organisational Behaviour, New Delhi, Mcgraw Hill Publishers, (Unit 3) Chapter - 3,4,5
3. Prasad L.M. (2000), Organisational Behaviour, New Delhi, Sultan Chand & Sons, (Unit 1 & 5) Chapter- 1, 10, 11
4. Steven L Mcshane, Mary Ann Von Glinow, Radha R Sharma, Organisational Behaviour: Emerging Knowledge and Practice for the Real World, TMH. (Unit - 5).

Sem. II
14PHS2108 **Credits: 2**

SELF-PACED LEARNING
(Topics for Self-Paced Learning)

1. **Option 1. History of Tiruchirappalli**

   Unit. I. Early Thiruchirappalli: Antiquity - Native Dynasties - Muslim Conquests.

   Unit. II. Medieval Thiruchirappalli: Vijayanagara Rule - Muslim Rule.

   Unit. III. Modern Thiruchirappalli: British Period - Economic System - Educational Development.

   Reference Book: Sundararaj, T., *History of Thiruchirappalli*, Sundar Publication, Thiruchirappalli, 2003.

2. **Option 2. Life and Mission of Periyar EVR**

   Unit. I. Personal Life

   Unit. II. Public Life

   Unit. III. Reform Movement

   Reference Book: Kannanantham, *Thanthai Periyar*, VOC Noolagam Publication, Chennai, 2007.

3. **Option.3. Contribution of Ayothidasa Pandithar**

4. **Option 4. Festivals of Tamil Nadu**

   Unit. I. Religious Festivals

   Unit. II. Secular Festivals

   Unit. III. Significance of Festivals

   Reference Book: Latha Anantharaman, *Tamil Nadu*, Roli Book Publication, New Delhi, 2001.

5. **Option 5. Aasivagamum Aiyyanaar Varalarum**

   Unit.I. Origin of Asivagam

   Unit. II. Spread of Asivagam

   Unit. III. Rise and Fall of Asivagam

   Reference Book: Nedumchezhiyan, K., *Asivagamum Aiyyanar Varalarum*, Palam Publications, Thiruchirappalli, 2014.

Sem. III **Hours/Week: 4**
14PHS3402 **Credits: 4**

IDC (BS):
HISTORY OF SCIENCE AND TECHNOLOGY

Objectives

* To study the scientific and technical inventions of ancient civilizations
* To illustrate the technological growth in nineteenth century
* To estimate the services of scientists in developing India

Learning activities

* Creating ability to search materials from internet
* Field trip to Tiruchirappalli Planetarium
* *Collecting newspaper clippings on recent Science and Technological growth*

Unit – 1: Development of Science and Technology

Definitions - Elements of Science and Technology - Science and Technology in Ancient and Medieval period in Greece, Rome, India, China, Europe and Arabia - Birth of Scientific inventions in Astronomy : Copernicus, Kepler, Galileo - Progress in Medical Science: Andreas Vesalius, Ambroise Pare, Paracelsus.

Unit – 2: Science and Technology in 18th Century

Foundations of Scientific Academics & Scientific growth in 18th Century: Royal Society of London and France - Progress in Physics and Mathematics, Chemistry and Medical Science - Invention in Textile Industry.

Unit – 3: Science and Technology in 19th Century

Science and Technology in the 19th Century: Charles Darwin - Michael Faraday - Sigmund Freud - Maxwell - Kelvin - Louis Pasteur - Patrick Manson - Progress in technology, transport - Steam Navigation - Automobiles - Modern Chemical Industry - Alfred Nobel - Communication: Telegraphs and Telephones.

Unit – 4: Science and Technology in 20th Century

Science and Technology in the 20th Century: X - Ray - Radium - Atom Bomb - Radio - Radar - Television - Computers & Internet - History of Aviation - Space Research in Russia & America.

Unit – 5: Science and Technology in Modern India

Progress of Science and Technology in Modern India: Progress in Astronomy - Space Research - Atomic Energy Commission - Green Revolution - Defense Research and Development Organization.

Books for Study

1. Varghese Jeyaraj, *History of Science and Technology*, Uthamapalayam, 2010.
2. Venkataraman, R, *History of Science and Technology*, Madurai, 1999.

Reference Books

1. Antony, HD, *Science and Background*, London, 1963.
2. Edgar Thorpe, *General Knowledge Manual*, New Delhi, 1995.
3. John Canning, *100 Great Modern Lives*, Calicut, 1972.
4. Kalpana Rajaram, *Science and Technology in India*, New Delhi, 1993.
5. Patrick Pringle, *Great Discoveries in Modern Science*, London, 1957.
6. Philip Leonard, *Great Men of Science*, London, 1950.
7. Sachdeu, SK, *Competition Success Review*, New Delhi, 1996.

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Semester IV **Hour/Week: 6**
14UHS230404A **Credits: 5**

Allied-II (Optional)
ONLINE TOURISM MARKETING

Objectives

* *To create an awareness about Online Marketing*
* *To provides practical knowledge on Network Marketing*
* *To encourage students for net-partnership.*

Unit I: Online Marketing **(18 Hours)**

Introduction – Development - Concept and Meaning - Electronics for Online Marketing

Unit II: Network and Internet **(19 Hours)**

Website - Portal - Homepage- Internet Protocols - E-Commerce - E- Business - E- Marketing - E- Money Transfer

Unit III: Online Marketing Environment **(16 Hours)**

Global Market - Legal Issues - Online Marketing in India Environment

Unit IV: Online Marketing Strategy **(23 Hours)**

Online Marketing Knowledge Development- Consumer Behavior- Segmentation Strategy-Differentiation and Market Positioning

Unit V: Online Marketing Management **(20 Hours)**

Product- Price - Consumer Relationship Management(CRM) - E- Marketing Management- Pros & Cons of Online Marketing.

TEXT BOOKS

1. Victor T.C. Middleton, *Marketing in Travel and Tourism*, Rutledge, 2009.
2. Christopher Holloway. J.& Chris Robins, *Marketing for Tourism*, Addison Wesley, Longman, 1995.

BOOKS FOR REFERENCE

1. BalajiKamlesh, Nag Debjani, *E- Commerce*, Tata McGraw Hill, New Delhi
2. Shaw Paul, *E- Business Privacy and Trust*, John Willeny & Sons, New York
3. Cheffer Dave, *Internet Marketing*, Prentice Hall, London
4. Strauss Judey, *E- Marketing*, PHI, New Delhi

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Semester V **Hour/Week: 5**
14UHS530209 **Credits: 3**

SOCIAL AND CULTURAL MOVEMENTS IN MODERN INDIA

Objectives

* *To understand the various movements started in India*
* *To analyze the background of the each movements*
* *To apply the concept to the present scenario*

Unit I: Structure of Modern Indian Society **(14 Hours)**

Society: Emergence of Elite Class, Ruling Class, Noble Class - Middle Class- Intermediatery Class, Merchant Class - Subaltern Class, Working Class, Labour Class,.

Unit II: Peasant & Tribal Movements **(16 Hours)**

Peasant Movements: Meaning - Definition - Indigo Cultivators' Strike - Deccan Riots - Punjab Riots - Telengana Movement - Moppillah Rebellion - Kheda Satyagraha - Champaran Satyagraha - Tribal Movements: Sanyasi Revolt - Santhal Revolt - Rampa Revolt - Birsa Munda Uprising.

Unit III: Religious Movements **(16 Hours)**

Hinduism: Brahma Samaj - AryaSamaj - Ramakrishna Mission - Vallalar's Sanmarka Sangam - Lingayat Movements.- Theosophical Society - Islamism: Aligarh Movement - Khilafat Movement - Christianity: Missionaries - Jesuits - Neo Buddhist Movement - Sikhism.

Unit IV: Social Movements **(18 Hours)**

Temple Entry Movement - Shri Narayana Dharma Paripalanam - Self Respect Movement - Depressed Class Movements - Dalit Movements - Dalit Buddhist Movement (Ambedkar) - Dravidian Movement (Ayothidasa Pandithar) - Bhoodan Movement - Social Reform Movement (Joythiba Bhule).

Unit V: Impact **(16 Hours)**

Impact of the Movements - Emergence of Subaltern Consciousness - Social Legislations.

TEXT BOOKS

1. Agnigothri, V.K., *Indian History*, Allied Publishers, New Delhi 2013.

REFERENCES

1. Bandyopadhyay, Sekhar, *Nationalist Movement in India*: *A Reader*, Oxford University Press, New Delhi, 2011.
2. Basham, A.L. *A Cultural History of India*, Oxford University Press, New Delhi, 2011.
3. Chandra, Bipan, *India's Struggle for Independence*, Penquin, United Kingdom, 2000.
4. Das Gulshan, *Voice of the Voiceless, Conceptualizing the Marginalized Psyche*, Authors Press, 2012.
5. Desai, A.R. *Social Background of Indian Nationalism*, Popular Prakasham, New Dehi 2005
6. Desai, A.R. *Society in India*, Popular Prakashan, New Dlehi, 1975
7. Dhanagare, *D.N. Peasant Movements in India: 1920 – 1950*, Oxford University Press, New Delhi, 1991.
8. Dube, S.C. *Indian Society*, National Book Trust, New Delhi, 2008.
9. Guha, Ramachandra, *Social Ecology*, Oxford University Press, New Delhi, 1998.
10. Guha, Ranajit, (ed.,) *Subaltern Studies Series*, Vols. I to VII, Oxford University Press, New Delhi, 1988.
11. Guha, Ranajit, *Elementary Aspects of Peasant Insurgency In Colonial India*, Oxford University Press, 2005.
12. Kumar, Kapil, *Peasants in Revolt*, Manoha Publication, New Delhi, 1984.
13. Raychaoudhary, S.C. *History of Modern India*, Surjeet Publications, New Delhi, 2010.
14. Stokes, Eric, *The Peasant and the Raj: Studies in Agrarian Society and Peasant Rebellion in Colonial India*, Cambridge University Press, 1980.

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Semester V **Hour/Week: 4**
14UHS530302A **Credits: 4**

Core Elective: HISTORY OF TAMILNADU AND CULTURE

Objectives

* To acquire knowledge about the culture of Sangam people.
* To bring to light the glory of the cultural past of the Tamils
* To acquire knowledge about the social and cultural aspects of the Tamil Society from the Sangam Age to British Period.

UNIT - I: SANGAM AGE **(12 Hours)**

Sources of Information - Land and People - Kingdoms Sangam Age - Society and Culture - Economic Life

UNIT - II: PALLAVAS **(12 Hours)**

Kalabhras - Sources - Origin and History of Pallavas - Administration - Society and Culture - Bhakti Movement - Art and Architecture

UNIT - III: IMPERIAL CHOLAS **(12 Hours)**

Sources – Polity – Administration – Society – Art and Architecture – Literature – Religion

UNIT - IV: PANDYAS **(14 Hours)**

I and II Pandyas - Sources - Society and Culture - Vijayanagar Empire - Kumara Kampanas's Expedition - Cultural Contributions

UNIT - V: NAYAKS AND BRITISH **(14 Hours)**

Sources - Nayaks of Madurai - Chenji - Tanjore - Administration - Cultural Contributions of Nayaks - Advent of Europeans – Cultural Changes During the British Period.

TEXT BOOKS

1. Devanesan. A, *History of Tamilnadu*, , Benu Publication, Marthandam, 2004.
2. Rajayyan, K., *History of Tamil Nadu*, Madurai, 1992.
3. Subramanian, T., *Social and Culture History of Tamil Nadu*. Madras, 1985.
4. SrinivasaIyengar, P.T., *History of The Tamils*, Madras, 1929.

BOOKS FOR REFERENCE

1. Balasubramanian, *The status of women in Tamil Nadu during the Sangam Age*, Madras, 1985.
2. Mahalingam T.V., *History of Tamil Nadu*,Maduari, 1977.
3. Minakshi. C., *Administration and Social Life under the Pallavas*, Madras, 1977.
4. Nagaswamy. R., *Studies in South Indian History and Culture*, Madras, *2000*
5. Pillay, K.K., *A Social History of the Tamils*. Madras, 1952
6. Srinivasa Aiyengar, *History of the Tamils*, Madras, 1929.

Semester V **Hour/Week: 4**
14UHS530302B **Credits: 4**

Core Elective: HISTORY OF JOURNALISM

Objectives

- To make the students understand the historical background of journalism.
- To facilitate the students to develop a rational approach towards present media.
- To equip the students to acquire the calibre of reading between lines.

Unit-I:

Origin of Journalism **(12 Hours)**

Definition - Scope- Principle - Historical Development - Paper- Print - Press – Report Writing.

Unit-II:

Modern Journalism **(12 Hours)**

Mass Communication - Print Media – Wireless – Photography – Film – Radio – Television - Internet Paper- New Media.

Unit-III:

Development of Popular Press **(14 Hours)**

Joseph Pulitzer- William Randolph Hearst- Northcliffe - American Revolution - French Revolution- Advertising - Morse Code - Electronic News Media - Online Journalism.

Unit-IV:

Modern Indian Press **(12 Hours)**

James Augustus Hicky - Press Freedom - Legal History - Sting Operation - Recent Trends.

Unit-V:

Select News Papers **(14 Hours)**

Bengal Gazette- Dainik Jagran- Dainik Bhaskar- Hindustan- Amar Ujala- Lokmat- DinaThanthi- Dinakaran- Dina Malar- Ananda Bazar Patrika- Rajasthan Patrika- Times of India- Hindustan Times- The Hindu- The Telegraph- Indian Express- Deccan Chronicle.

TEXT BOOKS

1. Ahuja, *Theory and Practice of Journalism*, Prentice-Hall, New Delhi, 2000.
2. Parthasarathi Rangaswamy, *Basic Journalism*, Macmillan India Ltd, New Delhi, 1984.
3. Murthy N K, *Indian Journalism*, Prentice-Hall, New Delhi, 1966.

BOOKS FOR REFERENCE

1. Mehta, *Mass Communication and Journalism in India*, Allied Pub Pvt Ltd, New Delhi, 1979.
2. Chelliah M, *Seithigal*, Prentice-Hall, New Delhi, 1990.
3. Iyengar, *Techniques of Technical Report Writing*, Prentice-Hall, New Delhi, 1970.
4. Rivers W L, *Mass Media: Reporting, Writing, Editing*, Prentice-Hall, New Delhi, 1983.
5. Kothandapani R, *Ethaliyal*, Prentice-Hall, New Delhi, 1983.
6. Venkataramaiah E S, *Freedom of Pres Some Recent Trends*, Prentice-Hall, New Delhi, 1980.

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Semester V **Hour/Week: 2**

14UFC540601 **Credits: 2**

ARCHITECTURAL AND HISTORICAL MONUMENTS IN TIRUCHIRAPPALLI

Objectives

- To make the students understand the history of Tiruchirappalli.
- To facilitate the students to classify the monuments of Tiruchirappalli.
- To equip the students to develop a comparative look on present day architecture.

Unit-I: Historical Background **(6 Hours)**

Etymology - Geography - History - Demography- Administration.

Unit-II: Hindu Monuments **(6 Hours)**

Rockfort Temple - Thiruvarangam Temple - Thiruvanaikkaval Temple - Samayapuram Temple - Woraiyur Temple - Vayalore Temple - Thiruverumbur Temple.

Unit-III: Muslim Monuments **(6 Hours)**

Nathervali Darga- Kajamalai Dargah- Bannadibi Dargah- Kalathur Dargah- Town Hall Mosque- Kadhar Mosque.

Unit-IV: Christian Monuments **(6 Hours)**

Pazhaya Kovil- St. Lourde's Church- St. John's Church- Holy Redeemer's Church- Roman Catholic Cathedral- St. Xavier's Church.

Unit-V: Secular Monuments **(8 Hours)**

Kallanai(Grant Anicut) - Rockfort- Mukkombu(Upper Anicut) - Main Guard Gate - Rani Mangammal Mahal- Gandhi Market - Railway Junction Building - Central Jail - Divisional Railway Manager's Building – St. Joseph's College.

BOOKS FOR REFERENCE

1. Baliga, B.S., *Madras District Gazetteers: Tiruchirappalli*, Government Press, 1998.
2. Sundararaj, T., *History of Tiruchirappalli*, Sundar Publications, Tiruchirappalli, 2003.
3. Jeyaraj, V., *Directory of Monuments in Tamilnadu*, Government Museum, 2005.
4. Om Gupta, *Encyclopaedia of India, Pakistan and Bangladesh*, Isha Books, Delhi, 2006.

5. Ashok Gosain and Ashih Gosain, *Travel House Guide to Incredible India*, Har Anand Publications, New Delhi, 2004.
6. Om Prakash, *Cultural History of India*, New Age International Publishers, Delhi, 2005.
7. *Indian Archaeology: A Review*, Department of Archaeology, Government of India, 1958.

Semester VI **Hour/Week: 7**
14UHS630213 **Credits: 5**

ECONOMIC HISTORY OF INDIA

Objectives

- To make the students understand the economic changes of Indian Subcontinent.
- To facilitate the students to get the knowledge of various sectors of Indian economy.
- To equip the students to develop the objective mind on economic policies and trends.

Unit-I:

Basic Concepts **(25 Hours)**

Economy – History – India - Geography of India - Physical Features of India - Natural Resources of India - Demography of India - Climatic Zones - Land Forms – Soils - Water Resources - Factors of Production- Sectors of Economy.

Unit-II:

Agricultural Sector **(25 Hours)**

Ancient – Medieval – Modern - Zamindari System - Permanent Settlement - Mahalwari System - Malguzari System - Ryotwari System - Tenancy Legislation - Commercialisation of Agriculture – Irrigation - Famines- Farming Pattern - Land Reforms - Green Revolution - National Agricultural Policy.

Unit-III:

Industrial Sector **(25 Hours)**

Ancient- Medieval- Modern- Handicraft- Decline of Native Industries- Rise of Modern Industries- Pattern of Industrialisation- Small Scale Industries- Large Scale Industries- Plantation Industry- Manufacturing Industry- Tourism Industry- Information Technology Industry- Industrial Sickness- Labour Problems- Labour Legislation- Industrial Disputes- National Industrial Policy.

Unit-IV:

Trading Sector **(17 Hours)**

Ancient – Medieval – Modern - Balance of Payments - Gregory Meek Mission - Drain of Wealth - Currency System - Free Trade Policy - Trade Agreements - Tariff Board - Foreign Capital - Trade Union - National Trading Policy.

Unit-V:

Recent Trends **(20 Hours)**

World Wars - Depressions - Demographic Trends - Cooperative Movements – Banking - Reserve Bank of India - Public Finance - Five Year Plans – Unemployment – Poverty - New Economic Policy - Day to Day Challenges.

TEXT BOOKS

1. Desai, S., *Economic History of India*, Himalaya Publication, New Delhi.
2. Jayabalan, *Economic History of India*, Atlantic Publication, New Delhi, 2008.
3. Thirunavukkarasar, *Economic History of India*, T.N. Text Book, New Delhi.

BOOKS FOR REFERENCE

1. Dutt, *Economic History of India*, Government of India, New Delhi, 1983.
2. Singh, *Economic History of India*, Allied Publication, New Delhi.
3. Desai, *Economic History of India*, Printice Hall Publication, New Delhi.
4. Rauchaudhri, *Cambridge Economic History of India*, Orient Longman Private Limited, New Delhi.
5. Rajendra Kumar, *Economic History of India*, Anmol Publication, New Delhi, 2006.
6. Mukeerjee, *Economic History of India*, Radha Publication, New Delhi, 2010.

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Semester VI **Hour/Week: 4**
14UHS630303A **Credits: 4**

HISTORY OF INDIAN ARCHITECTURE

Objectives

- To make the students understand the architectural history of India.
- To facilitate the students to realize the diversity of Indian architecture.
- *To equip the students to assess the architectural styles of present day.*

Unit-I: Buddhist Architecture and Evolution of Temple (12 Hours)

Ashokan School of Architecture: Sarnath Pillar, Sanchi Stupa- Buddhist Rock Cut Architecture: Chaitya Hall at Karli, Vihara at Nasik- Concept and Evolution of Hindu Temple - Shrines of The Gupta: Tigawa Temple, Ladh Khan Temple and Durga Temple, Aihole - Development of The Indo - Aryan & Dravidian Styles.

Unit-II: Dravidian and Indo - Aryan Style Temples (14 Hours)

Dravidian Style - Rock Cut Architecture of Pallavas - Mandapams, Rathas, Shore Temple at Mahaballipuram, Kailasanathar Temple at Kanchipuram - Evolution of The Dravidian Orders: Chola Style - Brihadeeswara Temple at Tanjore - Evolution of Gopuram and Temple Complexes During Pandyan Period: Meenakshi Amman Temple at Madurai - Indo Aryan Temple: Lingaraja Temple at Bhuvaneswar, Sun Temple at Konarak ,Khandarya Mahadev Temple at Khajuraho, Surya Temple at Modhera.

Unit-III: Islamic Architecture – Imperial and Provincial Styles (14 Hours)

Evolution of Islamic Architecture - Indian Mosque- Development of the Imperial Style: Qutb Minar Complex, Alai Darwaza, Tomb of Ghiasuddin Tughlaq, Khirki Masjid, Shish Gumbad, PuranaQuila- Development of Provincial Styles: Punjab Style: Tomb of Shah Rukni Alam, Bengal Style: Chota Sona Masjid, Jaunpur Style: Atala Masjid, Gujarat Style: Jami Masjid, Deccan Style: Golgumbaz, Charminar.

Unit. IV: Mughal Architecture (12 Hours)

Development of Mughal Style Under Different Rulers: Babur, Humayun, Akbar, Jahangir, Shahjahan, Aurangazeb- Humayun's Tomb at Delhi, Fatehpur Sikhri, Buland Darwaza, Diwani Khas, Tomb of Salim Chisti & Jami Masjid, Akbar's Tomb at Sikandara - The Taj Mahal at Agra - Red Fort at Delhi (Diwan-I-Am, Rang Mahal).

Semester VI **Hour/Week: 2**
14UFC640602 **Credits: 2**

PARTICIPATORY DEMOCRACY

Objectives

* To understand the structure of the corporation and political participation
* To make the students aware in the participating political affairs
* To learn the administrative pattern in corporation level

Unit-I:

Corporation **(6 Hours)**

Historical Background of Corporation City - Tiruchirappalli - Population - Language and Culture - Literacy - Religion - Social and Economic Status.

Unit-II:

Elections **(6 Hours)**

Parliament Election - Assembly Election - Local Body Election - Other Union Election in Corporation Level.

Unit-III:

People's Political Participation **(8 Hours)**

Awareness – Willingness - Role of National Political Parities - Role of State Political Parties - Independent Candidates - Competitive Candidates - Confusing Candidates.

Unit-IV:

Electoral Process **(6 Hours)**

District Election Officer - Declaration of Election date - Eligible Candidates - Election of Mayor - Councilors – Ward Members.

Unite-V:

Roles and Functions **(6 Hours)**

People Welfare - Various Sections in the Corporation City - Administration - Corporate Officers - Public Works - Maintaining Peace

Text Books

1. Laxmikanth, *Public Administration*, TATA McGraw Hill's Series, New Delhi, 2011.

References

1. Agarwal, R.C. *Constitutional Development and National Movement of India*, S. Chand & Company Ltd., New Delhi, 2009.
2. Basu, Rumki, *Public Administration: Concepts and Theories*, Sterling Publishers (P) Ltd., New Delhi, 2009.
3. Bhagavan Vishnoo, and Vidya Bhushan, *Public Administration*, S. Chand & Company Ltd., New Delhi, 2010.
4. Gupta, Durga Das, *Introduction to the Constitution of India*, LexisNexis Butterworths Wadhwa, Nagpur, 2010.
5. Maheshwari, S.R. *Indian Administration*, Orient Blackswan, New Delhi, 2009.
6. Sundararaj, T. *History of Tiruchirappalli*, Sundar Publications, Tiruchirappalli, 2005.
7. Sundararaj, T. *Social and Cultural Aspects of Tamil Nadu*, Sundar Publications, Tiruchirappalli, 2006.
8. Venkatesan, G. *Public Administration: Principles, Practices, Perspectives*, V.C. Publications, Rajapalayam, 2009.

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Sem. I **Hours/Week: 5**
14PCS1102 **Credits: 4**

ADVANCED MICROPROCESSORS AND MICRO CONTROLLERS

Objective

* To understand the concepts of different types Microprocessors, Microcontrollers and Embedded System.

Unit I **12 Hr**

8086:Architecture- PIN Diagrams - Timing Diagrams - Register Organization of 8086 - Architecture - Instruction Set of 8086. MICROPROCESSOR WITH MEMORY MANAGEMENT AND PROTECTION: Features of 80286 - Internal Architecture - Register Organization - Internal Block Diagram - Interrupts - Real and Protected Virtual Addressing - Interfacing Memory and I/O Devices with 80286 - Addressing Modes - Math Coprocessor.

Unit II **12 Hr**

BEGINNING OF 32-BIT MICROPROCESSORS: Architecture of 80386 - Register Organization - Addressing Modes of 80386 - Data Types - Concepts of Addressing in Real and Protected Modes - Segmentation and Paging - Conversion of a Linear Address to a Physical Address - Features of 80486 - Architecture and Register Organization of 80486.

Unit III **12 Hr**

PROCESSORS OF NEW MILLENNIUM: Salient Features of Pentium 4 - Modules of Pentium 4 Architecture: Front End Module, Out of Order Execution Engine, Execution Module, Memory Subsystem Module - Superscalar Execution - Pipelining -Hyper Threading in Pentium - RISC Processors: Basic Features and Advantages only.

Unit IV **12 Hr**

MICROCONTROLLERS:Architecture of 8051 - Register set - Memory and I/O Addressing - Interrupts - Six Addressing Modes - Ports of 8051 and their Operation - Architecture of 16-bit Microcontroller 80196.

Unit V **12 Hr**

EMBEDDED SYSTEMS AND REAL TIME OPERATING SYSTEMS (RTOS): Introduction to Multitasking - Simple Embedded Multitasking Systems - RTOS - Tasks in RTOS - Scheduling of Tasks - Resource Protection by Semaphore Concept - Examples of Applications: Temperature Monitor (Tasks,

Programming, Hardware Requirements, Dealing with Numbers) - A Model Train Controller - Length Measurement for Rolling Paper.

Text Books

1. A.K.Ray&K.M.Bhurchandi, "Advanced Microprocessors and Peripherals", TMH, 2nd Ed., 2007. UnitS: I, II & III
2. Rajiv Kapadia, "8051 Microcontroller & Embedded Systems", Jaico Publishing House, 2006. UnitS: IV & V

Books for Reference

1. Tim Wilmshurst, "An Introduction to the Design of Small Scale Embedded Systems", Palgrave Publishers, 2004.
2. Muhammad Ali Mazidi et al., "The 8051 Microcontroller and Embedded Systems" Pearson Education, 2nd Ed., 2006.

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Sem. I **Hours/Week: 3**
14PCS1104 **Credits: 2**

Software Lab-II

RDBMS & MICROPROCESSOR SIMULATOR

SQL

1. Simple Queries using DDL, DML, and DCL
2. SQL Functions, SET Operations
3. Nested Queries

PL/SQL

4. Cursors
5. Database Triggers and Packages.

FORMS AND REPORTS

6. Designing Oracle Forms with Menus, Buttons and LOVs.
7. Developing Oracle Reports (Tabular, Master / Detail, Matrix and Mailing label).

MICROPROCESSOR PROGRAMS USING SIMULATOR

1. Write an ALP to find factorial of number for 8086.
2. The 8 data bytes are stored from memory location E000H to E007H. Write 8086 ALP to transfer the block of data to new location B001H to B008H.
3. Write a program to display string "DEPARTMENT OF INFORMATION TECHNOLOGY"
4. Write a program to reverse the given string for 8086.
5. Write a program to multiply 2 numbers (16-bit data) for 8086.
6. Write a program to find Largest No. in a block of data. Length of block is 0A. Store the maximum in location RESULT.
7. Sum of series of 10 numbers and store result in memory location total.

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Sem. I **Hours/Week: 4**
14PCS1201A **Credits: 4**

Core Elective-I:

DATA WAREHOUSING AND DATA MINING

Objective

* To provide an understanding of Data warehouses and Data Mining concepts.

Unit I **10 Hr**

INTRODUCTION: Data Mining What, Why - Data Mining Process - Applications - Techniques - Case Studies - Future of Data Mining - Guidelines for successful Data Mining - Data Mining Software. DATA WAREHOUSING: Introduction - Operational Data Stores - ETL - Data Warehouses, Design, Guidelines for Data Warehouse Implementation - Data Warehouse Metadata - Case Studies - OLAP:Introduction - Characteristics of OLAP Systems - Motivations for Using OLAP - Multidimensional View and Data Cube - Data Cube Operations.

Unit II **10 Hr**

ASSOCIATION RULE MINING: Introduction - Basics - Task and a Naive Algorithm - The Apriori Algorithm - Improving the efficiency of the Apriori Algorithm - Aprioir - TID - Direct Hashing and Pruning - Dynamic Itemset Counting - Mining Frequent Patterns without Candidate Generation - Performance Evaluation of Algorithms - Software for Association Rule Mining.

Unit III **10 Hr**

CLASSIFICATION: Introduction - Decision Tree - The Tree Induction Algorithm - Split Algorithm on Information Theory, Gini Index - Over fitting and Pruning - Decision Tree Rules - Naive Bayes Method - Estimating Predictive and Improving Accuracy of Classification Methods - Other Evaluation Criteria for Classification Methods - Classification Software.

Unit IV **10 Hr**

CLUSTER ANALYSIS: Cluster Analysis, What - Desired Features of Cluster Analysis - Types of Data - Computing Distance- Types of Cluster Analysis Methods - Partitioned, Hierarchical, Density-based methods - Dealing with Large Databases, Methods - Quality and Validity of Cluster Analysis - Cluster Analysis Software.

Unit V **10 Hr**

WEB DATA MINING: Introduction - Web Terminology and Characteristics - Locality and Hierarchy in the Web - Web Content Mining - Web Usage Mining - Web Structure Mining - Web Mining Software. INFORMATION PRIVACY AND DATA MINING: Introduction - Information Privacy What - Basic Principles to Protect Information Privacy - Uses and Misuses of Data Mining - Prime Aims of Data Mining, Pitfalls - Current Principles are Ineffective.

Text Books

1. G.K. GUPTA, Introduction to Data Mining with Case Studies" PHI Learning Pvt. Ltd., 2006.

Books for Reference

1. Jiawei Han and MichelineKamber, "Data Mining Concepts and Techniques", 2nd Ed., Morgan Kaufmann Publishers, 2006. New Delhi.
2. Margret H. Dunham, "Data Mining: Introductory and Advanced Topics", Pearson Education, 2003, New Delhi.

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Sem. II
14PCS2109 **Credits: 2**

Self Paced Learning:

OPEN SOURCE TECHNOLOGY

Objective

* To provide an understanding of open source technology.

Unit I

OPEN SOURCE SOFTWARE DEFINITIONS AND HISTORY: Definition of Terms - A Brief History of Software. OPEN SOURCE IS SUCCESSFUL: Analytical Framework - Open source is in Widespread Successful Use. OPEN SOURCE - THE GOOD, THE BAD AND THE UGLY: Good about Open Source - Open Source is not enough by itself- Choosing Open Source is more difficult for you.

Unit II

FIVE IMMEDIATE OPEN SOURCE OPPORTUnitIES: Bring New Desktop Systems to the Underserved - Migrate Applications and Databases to Open Source. FIVE MORE OPEN SOURCE OPPORTUnitIES: Directory Services, Email, Groupware and Collaboration - Complex Web Publishing, Manage User Desktops.

Unit III

OPEN SOURCE SERVER APPLICATIONS: Infrastructure Services - Web Servers - Database Servers - Mail Servers - System Management. OPENSOURCE DESKTOP APPLICATIONS: Graphical Desktops - Web Browsers -The Office Suite - Mail and Calendar Clients - Personal Software.

Unit IV

OPEN SOURCE SOFTWARE DEVELOPMENT: Methodology, Languages used to Develop Open Source Products - Cross Platform Code. MANAGING SYSTEM IMPLEMENTATION: Implementation Roles - Open Source Impact on Team Issues - Implementation Process - Implementation Principles - Key Documents - Migration - Interacting with the Open Source Community.

Unit V

APPLICATION ARCHITECTURE: Types of Systems - Tired Design - Managing Performance and Scalability - Interoperability - Development Platform Choices. THE COST OF OPEN SOURCE SYSTEMS: Total Cost of Ownership - Types of Costs - Scenarios.

Text Book

1. Paul Kavanagh, "Open Source Software: Implementation and Management", Elsevier Digital Press, 2004.

Book for Reference

1. James Lee and Brent Ware, "Open Source Web Development with LAMP using Linux, Apache, MySQL, Perl and PHP", Dorling Kindersley (India) Pvt.Ltd., 2008.

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Sem. II **Hours/Week: 4**
14PCS2202A **Credits: 4**

Core Elective-II:

XML AND WEB SERVICES

Objective

* To understand the basics of XML documents, style sheets and document type definitions and also the basic concepts of web services and its technologies like SOAP, etc.

Unit I **10 Hr**

INTRODUCTION TO XML: An Eagle Eye View of XML - XML Definition - Life of an XML Document - Related Technologies. STRUCTURING THE DATA: Examining the Data - XMLizing the Data - Advantages of the XML format - Preparing a Style Sheet for Document Display. ATTRIBUTES, EMPTY TAGS AND XSL: Attributes - Attributes Vs Elements - Empty Tags. XSL WELL FORMEDNESS: Well Formed Rules - XML Documents - Text in XML - Processing Instructions.

Unit II **10 Hr**

DOCUMENT TYPE DEFINTION: Document Type Definition and Validity - Document Type Declaration - Validation against DTD - Listing Elements - Element Declaration - Comments in DTD - Entities and External DTD Subset - Attribute Declaration in DTD's - Attribute type - Predefine Attribute.

Unit III **10 Hr**

WEB SERVICES:Concepts of Web Services - SOAP, WSDL, UDDI - Importance of Web Services - Evolution of Web Applications - Distributed Computing Platform - Web Services and Enterprises.

Unit IV **10 Hr**

BASIC WEB SERVICES STANDARDS, TECHNOLOGIES AND CONCEPTS: SOAP Model - SOAP - SOAP Messages - SOAP Encoding - SOAP RPC - Using Alternative SOAP Encodings - Document, RPC, Literal , Encoded SOAP.

Unit V **10 Hr**

UDDI: UDDI at a Glance - UDDI Business Registry - Accessing UDDI. WSDL: WSDL using SOAP and UDDI.

Text Books

1. Elliotte Rusty Harold, " XML Bible", IDG Books India, New Delhi, 2004. UnitS: I & II
2. Sandeep Chatterjee, James Webber, " Developing Enterprise Web Services - An Architect's Guide", PHI, New Delhi, 2003. UnitS: III, IV and V

Books for Reference

1. Gold forb, "XML hand book", Pearson Education, New Delhi, 2003.
2. B V Kumar, S V Subramanya, "Web Services: An Introduction", Tata McGraw Hill Publishing Co., New Delhi, 2006.

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Sem. II **Hours/Week: 4**
14PCS2401 **Credits: 4**

IDC (WS):
MOBILE COMPUTING

Objective

* To provide basis for various techniques in Pervasive and Mobile Computing.

Unit I **10 Hr**

MOBLIE COMPUTING: Adaptability - The Key to Mobile Computing - Mechanisms for Adaptation - Development or Incorporation of Adaptations in Applications. MOBILITY MANAGEMENT: Concept of Mobility Management - Location Management - Principles and Techniques.

Unit II **10 Hr**

Data Dissemination - Mobile Data Caching - Mobile Cache Maintenance Schemes - Moblie Web Caching. CONTEXT-AWARE COMPUTING: Ubiquitous of Pervasive Computing - Various Definitions and Types of Contexts - Context Aware Computing & Applications - Middleware Support. INTRODUCTION TO MOBILE MIDDLEWARE:Definition of Mobile Middleware - Application - Agents - Service Discovery.

Unit III **10 Hr**

INTRODUCTION TO AD-HOC AND SENSOR NETWORKS: Overview - Properties of an Ad-hoc Network -Unique Features of Sensor Networks - Proposed Applications -Challenges - Constrained Resources - Security - Mobility.

Unit IV **10 Hr**

WIRELESS SECURITY: Traditional Security Issues - Mobileand WirelessSecurity Issues. - Problems in Ad-hoc Networks. APPROACHES TO SECURITY: Limit the Signal -Encryption - Integrity Codes - IPSec - Other Security Related Mechanisms.

Unit V **10 Hr**

SECURITY IN WPAN: Security in Wireless Personal Area Networks - Basic Idea - Bluetooth Security Modes - Basic SecurityMechanisms - Encryption: Authentication - Limitation and Problems. SECURITY IN WLAN: Security in Wireless Local Area Networks - Basic Ideas - Wired-Equivalent Privacy (WEP) - WEP Fixes and Best Practices.

Text Books

1. Frank Adelstein, Sandeep K.S., Gupta Golden G. Richard III Loren Schwibert “Fundamentals of Mobile and Pervasive Computing”, TMG Edn. Pvt. Ltd.,2005.

Books for Reference

1. Roopa R Yavagal, Hasan Ahmed, Asoke K Talukder, “Mobile Computing: Technology, Applications and Service Creation”, 2nd Ed., Tata McGraw Hill Pvt. Ltd., 2010
2. UweHansmann, Martin S. Nicklous, LotharMerk, Thomas Stober, “Principles of Mobile Computing”, 2nd Ed., Springer, 2006.

Sem. III **Hours/Week: 5**
14PCS3113 **Credits: 4**

ANDROID PROGRAMMING

Objective

* To understand the concepts and learn the tools for developing applications on mobile platforms like Android.

Unit I **12 Hr**

INTRODUCTION TO MOBILE DEVELOPMENT: Mobile Computing - History of Mobile Environments - Early Mobile Phones to Smartphones and Tablets - Development for Mobile Environments - Differences from Traditional Application Development - Trends in Mobile Development.

Unit II **12 Hr**

MOBILE DEVELOPMENT: Advantages - Limitations - Features useful for mobiles - Geolocation - offline web applications - offline web storage - animations - 2D/3D graphics - Audio/Video - FRAMEWORKS: HTML5 - Phone Gap (Apache Cordova) framework and jQuery Mobile framework.

Unit III **12 Hr**

INTRODUCTION TO ANDROID: Android Overview - Features Architecture- Applications - Application Frameworks - Libraries - Runtime - Kernel- Android Ecosystem - Application Stores - Publishing.ANDROID DEVELOPMENT TOOLS Android SDK - Android Emulator - Development on Hardware Devices.

Unit IV **12 Hr**

BASIC ANDROID DEVELOPMENT: Writing Android Applications - Activity Lifecycle - Multi Device Support - Fragments - Data Storage - Intents - Data Sharing - Audio Playback - Photo Capture.

Unit V **12 Hr**

ADVANCED ANDROID DEVELOPMENT: Animations - OpenGL ES - Wireless Connections - Data Syncing - Location Aware Applications - Best Practices for Development - Security - Distribution and Monetizing.

Textbook

1. Ed Burnette, “Hello Android: Introducing Google’s Mobile Development Platform”, The Pragmatic Programmers, New Delhi, 3rd Ed., 2010

Book for Reference

1. Wei-Meng Lee, “Beginning Android 4 Application Development” Wiley India Pvt. Ltd., 2011.

Sem. III **Hours/Week: 3**
14PCS3115 **Credits: 2**

Software Lab-VI:
ANDROID

1. Simple Programs
2. Using Buttons
3. Changing Colors and Backgrounds
4. Manipulating Text
5. Working with Images
6. Links
7. Adding Audio & Video
8. Fragments
9. Intents
10. Data Sharing

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Sem. III
14PCS3117 **Credits: 2**

COMPREHENSIVE EXAMINATION

Unit I :
JAVA, Database

Unit II :
Microprocessors, ASP.NET

Unit III :
J2EE, Software Engineering

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Sem. III **Hours/Week: 4**
14PCS3203B **Credits: 4**

Core Elective-III:

CLOUD COMPUTING

Objective

* To impart the basic concepts of Cloud Computing and its applications.

Unit I **10 Hr**

INTRODUCTION TO CLOUD COMPUTING: Roots of Cloud Computing - Layers and Types of Cloud - Features of a Cloud - Infrastructure Management - Cloud Services - Challenges and Risks - Migrating into a Cloud: Introduction - Broad Approaches - Seven Step Model - Integration as a Service - Integration Methodologies - SaaS.

Unit II **10 Hr**

INFRASTRUCTURE AS A SERVICE: Virtual Machines - Layered Architecture - Life Cycle - VM Provisioning Process - Provisioning and Migration Services - Management of Virtual Machines Infrastructure - Scheduling Techniques - Cluster as a Service - RVWS Design - Logical Design - Cloud Storage - Data Security in Cloud Storage - Technologies.

Unit III **10 Hr**

PLATFORM AND SOFTWARE AS A SERVICE: Integration of Public and Private Cloud - Techniques and Tools - Framework Architecture -Resource Provisioning Services - Hybrid Cloud - Cloud Based Solutions for Business Applications - Dynamic ICT Services - Importance of Quality and Security in Clouds - Dynamic Data Center - Case Studies - Workflow Engine in the Cloud - Architecture - Utilization - Scientific Applications for Cloud - Issues - Classification - SAGA - Map Reduce Implementation.

Unit IV **10 Hr**

MONITORING AND MANAGEMENT: An Architecture for Federated Cloud Computing - Use Case - Principles - Model - Security Considerations - SLA Management - Traditional Approaches to SLO - Types of SLA - Life Cycle of SLA - Automated Policy - Performance Prediction of HPC - Grid and Cloud - HPC Performance Related Issues.

Unit V **10 Hr**

APPLICATIONS: Best Practices in Architecting Cloud Applications in the AWS Cloud - Massively Multilayer Online Game Hosting on Cloud Resources - Building Content Delivery Networks using Clouds - Resource cloud Mashups

Textbooks

1. Rajkumar Buyya, James Broberg and Andrzej Goscinski, “Cloud Computing Principles and Paradigms”, Wiley Publications, 2011

Books for Reference

1. George Reese, “Cloud Application Architectures”, Shroff O’reilly, ISBN: 8184047142, 2009.
2. Michael Miller, “Cloud Computing Web Based Applications that change the way you work and collaborate online”, Pearson Education, 2009.

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Sem. III **Hours/Week: 4**
14PCS3402 **Credits: 4**

IDC (BS):

ADVANCES IN COMPUTER SCIENCE

Objective

* To understand the recent trends in the field of Computer Science.

Unit I **10 Hr**

MOBILE COMPUTING: Mobile Computing Environment- Functions - Architecture- Design Considerations, Content Architecture - CC/PP Exchange Protocol, Context Manager - Data Management in WAE - Security in Mobile Computing.

Unit II **10 Hr**

ANDROID: History of Android - Android Architecture - App Architecture - Components - Intents - Manifest - App Package - Activities - Services - Broadcast Receivers - Content Providers - Creating an Android Virtual Device

Unit III **10 Hr**

CLOUD COMPUTING: Cloud Computing - History of Cloud Computing - Cloud Architecture - Cloud Storage - Why Cloud Computing Matters - Advantages of Cloud Computing - Disadvantages of Cloud Computing - Companies in the Cloud Today - Cloud Services.

Unit IV **10 Hr**

BIG DATA: Analytics - Nuances of Big Data - Value - Issues - Case for Big data - Big Data Options Team Challenge - Big Data Sources - Acquisition - Nuts and Bolts of Big data. Features of Big Data -Security, Compliance, Auditing and Protection - Evolution of Big data - Best Practices for Big Data Analytics - Big Data Characteristics.

Unit V **10 Hr**

HACKING: Hacking Windows - Network Hacking - Web Hacking - Password Hacking. A Study on Various Attacks: Input Validation Attacks - Buffer Overflow Attacks - Privacy Attacks.

Text Books

1. Asoke K Taukder, Roopa R, Yavagal, “Mobile Computing”, TMG, New Delhi, 2005. Unit : I
2. Dave Smith and Jeff Friesen, “Android Recipes: A Problem - Solution Approach”, Rakmo Press (P) Ltd, New Delhi, 2011. Unit : II
3. Michael Miller, “Cloud Computing: Web-Based Applications That Change the Way You Work andCollaborate Online”, Que Publishing, 2008. Unit : III
4. Frank J Ohlhorst, “Big Data Analytics: Turning Big Data into Big Money”, Wiley and SAS Business Series, 2012. Unit : IV
5. AnkitFadia, “ Ethical Hacking” 2nd Ed., Macmillan India Ltd, 2006. Unit : V

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Sem. I **Hours/Week: 3**
14PIT1105 **Credits: 2**

Software Lab-II:

RDBMS

SQL

1. Simple Queries using DDL, DML, and DCL
2. SQL Functions
3. SET Operations
4. View and Snapshots
5. Nested Queries

PL/SQL

6. PL/SQL Block
7. Cursors
8. Database Triggers
9. Subprograms and Packages.

FORMS AND REPORTS

10. Designing Oracle Forms with Menus, Buttons and LOVs
11. Master-Detail Form Design.
12. Developing Oracle Reports (Tabular, Master / Detail, Matrix and Mailing label)

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Sem. I **Hours/Week: 4**
14PIT1201A **Credits: 4**

Core Elective-I:

'OOAD' AND 'UML'

Objective

* To impart the concepts of Object Oriented Methodologies and Unified Modeling Language.

Unit I **10 HRS**

INTRODUCTION: An Overview of Object Oriented Systems Development - Object Basics - Object Oriented Systems Development Life Cycle. OBJECT ORIENTED METHODOLOGIES: Rumbaugh Methodology - Booch Methodology - Jacobson Methodology - Unified Approach.

Unit II **10 HRS**

OBJECT ORIENTED ANALYSIS: Identifying Use Cases - Object Analysis - Classification - Identifying Object Relationships - Attributes and Methods. OBJECT ORIENTED DESIGN: Object Oriented Design Process and Design Axioms - Designing Classes.

Unit III **10 HRS**

UML: Introduction-Importance of Modeling - Principles of Modeling- Object oriented Modeling- Introducing UML. BASIC STRUCTURAL MODELING: Classes -Relationships-Common Mechanisms- Diagrams - Class Diagrams.

Unit IV **10 HRS**

BASIC BEHAVIORAL MODELING: Interactions- Use Cases -Use Case Diagrams-Interaction Diagram - Activity Diagram. ADVANCED BEHAVIORAL MODELING: State Diagrams.

Unit V **10 HRS**

ARCHITECTURAL MODELING: Artifacts - Deployments - Collaborations - Patterns and Frame works- Artifacts Diagrams- Deployment Diagrams.

TEXT BOOKS

1. Ali Bahrami, "Object Oriented systems Development", Irwin - McGraw Hill, New Delhi, 2008. CHAPTERS: 1-3, 4, 6-10. UnitS: I & II
2. Grady Booch, James Rambaugh, Ivar Jacobson" The Unified Modeling Language User Guide" Pearson Education, New Delhi, 2004. Chapters: 1, 2, 4, 5-20, 25, 26, 28, 30-32. UnitS: III, IV & V

BOOK FOR REFERENCE

1. James Rumbaugh, Ivar Jacobson, Grady Booch "The Unified Modeling Language Reference Manual", Addison Wesley, 1999.

Sem. I **Hours/Week: 4**
14PIT1201B **Credits: 4**

Core Elective-I:

LINUX ADMINISTRATION

Objective

* To understand the principles of Linux Operating System for effective System administration.

Unit I **10 HRS**

LINUX INTRODUCTION AND INSTALLATION: Linux - Advantages -Red Hat Linux-New Features-Installation Procedures and Methods.

Using Desktop - GNOME - KDE - Linux Commands.

ACCESSING AND RUNNING APPLICATIONS: Installing Red Hat Linux Applications - Running Window Application - Running Windows, DOS and Macintosh Applications - Tools for using Internet and Web.

Unit II **10 HRS**

ADMINISTRATION: Understanding System Administration: Root login-super user - GUI tools, commands and Log files - Configuring Hardware - File System and Disk Management - Monitoring performances.

SETTING UP AND SUPPORTING USERS: Creating user accounts - Setting user defaults - Creating Desktops-Modifying and Deleting Accounts.

Unit III **10 HRS**

SECURITY ISSUES: Hacker versus Cracker-Password Protection-Protection from Break-in-Filtering Network Access -Firewalls- Detecting Instructions - Encryption Techniques.

Unit IV **10 HRS**

NETWORKING: Setting up a LAN- LAN- Wireless-LAN- Understanding IP Addresses. CONNECTING TO INTERNET: Dialup Connection- Red Hat Linux as a Router-VPN Connection-Red Hat Linux as a Proxy Server-Proxy Clients.

Unit V **10 HRS**

SETTING UP FILE SERVER:

Setting up- Netware File Server. SETTING UP A WEB SERVER:Web Server-

Starting Apache Web Server -Configuring Apache Server -Starting and Stopping the Server - Monitoring Activities.

TEXT BOOKS

1. Christopher Negus “Red Hat Linux 9 Bible “, WILEY - Dreamtech India Pvt. Ltd, New Delhi, First Edition, 2003

BOOK FOR REFERENCE

1. Thomas Schenk, “Red Hat Linux System Administration”, Techmedia, New Delhi, 2003.

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Sem. II
14PIT2110 **Credits: 2**

Self-Paced Learning:

OPEN SOURCE TECHNOLOGY

Objective

* To provide an understanding of open source technology.

Unit I

OPEN SOURCE SOFTWARE DEFINITIONS AND HISTORY: Definition of Terms - A Brief History of Software. OPEN SOURCE IS SUCCESSFUL: Analytical Framework - Open source is in Widespread Successful Use. OPEN SOURCE - THE GOOD, THE BAD AND THE UGLY: Good about Open Source - Open Source is not enough by itself- Choosing Open Source is more difficult for you.

Unit II

FIVE IMMEDIATE OPEN SOURCE OPPORTUnitIES: Bring New Desktop Systems to the Underserved - Migrate Applications and Databases to Open Source. FIVE MORE OPEN SOURCE OPPORTUnitIES: Directory Services, Email, Groupware and Collaboration - Complex Web Publishing, Manage User Desktops.

Unit III

OPEN SOURCE SERVER APPLICATIONS: Infrastructure Services - Web Servers - Database Servers - Mail Servers - System Management. OPENSOURCE DESKTOP APPLICATIONS: Graphical Desktops - Web Browsers -The Office Suite - Mail and Calendar Clients - Personal Software.

Unit IV

OPEN SOURCE SOFTWARE DEVELOPMENT: Methodology, Languages used to Develop Open Source Products - Cross Platform Code. MANAGING SYSTEM IMPLEMENTATION: Implementation Roles - Open Source Impact on Team Issues - Implementation Process - Implementation Principles - Key Documents - Migration - Interacting with the Open Source Community.

Unit V

APPLICATION ARCHITECTURE: Types of Systems - Tired Design - Managing Performance and Scalability - Interoperability - Development Platform Choices. THE COST OF OPEN SOURCE SYSTEMS: Total Cost of Ownership - Types of Costs - Scenarios.

TEXT BOOKS

1. Paul Kavanagh, “Open Source Software: Implementation and Management”, Elsevier Digital Press, 2004.

BOOK FOR REFERENCE

1. James Lee and Brent Ware, “Open Source Web Development with LAMP using Linux, Apache, MySQL, Perl and PHP”, Dorling Kindersley(India) Pvt. Ltd., 2008.

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Sem. II **Hours/Week: 2**
14PIT2111 **Credit: 1**

TECHNICAL APTITUDE

Unit I : C

Unit II : JAVA

Unit III : SQL

Sem. II **Hours/Week: 4**
14PIT2202A **Credits: 4**

Core Elective-II:

MOBILE COMPUTING

Aim

* To understand the basic concepts and methods for building distributed and mobile computing systems

Unit I **10 HRS**

INTRODUCTION: Mobile Computing - Developing Mobile Computing Applications - Standard Bodies. MOBILE COMPUTING ARCHITECTURE: Design Considerations for Mobile Computing - Mobile Computing through Internet - Making Existing Applications Mobile Enabled. EMERGING TECHNOLOGIES:Bluetooth - RFID - WIMAX - Mobile IPV6.

Unit II **10 HRS**

GLOBAL SYSTEM FOR MOBILE COMMUNICATION (GSM): GSM Architecture - GSM Entities - Call Routing in GSM - Mobility management. GENERAL PACKET RADIO SERVICE (GPRS): GPRS Network Architecture - GPRS Network Operations - Data Services in GPRS - Applications of GPRS - Limitations of GPRS - Wireless Application Protocol (WAP). CDMA AND 3G: CDMA Versus GSM - Wireless Data - 3G Network - 3G Applications.

Unit III **10 HRS**

WIRELESS LAN: Advantages of Wireless LAN - IEEE 802.11 Standards - Wireless LAN Architecture - Mobility in Wireless LAN - Deploying Wireless LAN - Mobile AdHoc Networks and Sensor Networks - Wireless LAN Security. INTELLIGENT NETWORKS: Fundamentals of Call Processing - Intelligence in the Networks.CLIENT PROGRAMMING: Moving Beyond the Desktop - Mobile Phones - Features - PDA - Design Considerations.

Unit IV **10 HRS**

PROGRAMMING FOR PALM OS: Palm OS Architecture - Application Development. WIRLESS DEVICES WITH SYMBIAN OS: Symbian OS Architecture - Applications of Symbian. J2ME: Java in the Handset - J2ME Technology - Programming for CLDC - GUI in MIDP - UI Design Issues. WIRELESS DEVICES WITH WINDOWS CE: Windows CE Architecture-Windows CE Development Environment.

Unit V **10 HRS**

VoIP AND CONVERGENCE: VoIP - Real time Protocols - Convergence Technologies - Call Routing - VoIP Applications - IP Multimedia Subsystem

(IMS) - Mobile VoIP. SECURITY ISSUES: Information Security - Security Techniques and Algorithms - Security Protocols - PKI - Security Models - Security Frameworks for Mobile Environment.

TEXT BOOKS

1. Asoke K Taulkder, Hasan Ahmed, Roopa R Yavagal, “Mobile Computing Technology, Applications and Service Creation”, 2nd Ed., TMH Pvt. Ltd., 2011.

BOOK FOR REFERENCE

1. Raj Kamal, “Mobile Computing”, Oxford University Press, 2007.

Sem. II **Hours/Week: 4**
14PIT2401 **Credits: 4**

IDC (WS):
WIRELESS NETWORKS

Objective

* To study some fundamental concepts in wireless networks, wireless LAN and wireless WAN.

Unit I **10 HRS**

INTRODUCTION: Cellular Revolution - Global Cellular Network - Broadband -Future Trends. TRANSMISSION FUNDAMENTALS: Signals - Channel Capacity - Transmission Media - Multiplexing.

Unit II **10 HRS**

SATELLITE COMMUNICATION: Satellite Parameters and Configuration - Capacity Allocation - Frequency Division and Time Division. SPREAD SPECTRUM: Frequency Hopping - Direct Sequence Spread - Code Division Multiple Access.

Unit III **10 HRS**

WIRELESS WANs: First Generation Analog -SecondGeneration TDMA - GSM - Short Messaging Service in GSM - Second Generation CDMA- Third Generation Systems - GPRS.

Unit IV **10 HRS**

WIRELESS LANs: Introduction to wireless LANs - IEEE 802.11 Architecture and Services - WLAN - MAC Sublayer - MAC Management Sublayer - HIPERLAN - Wireless ATM.

Unit V **10 HRS**

ADHOC NETWORKING: IEEE 802.15 WPAN - HomeRF. BLUETOOTH - Radio Specification - Baseband Specification - Link Manager Protocol WIRELESS GEOLOCATION: System Architecture - Technologies - E-911 Services.

TEXT BOOKS

1. William Stallings, “Wireless Communications and networks”, Pearson / Prentice Hall of India, 2nd Ed., 2007. UnitS: I, II & III
2. Kaveth Pahlavan, Prashant Krishnamurthy, “Principles of Wireless Networks”, Pearson Education Asia, New Delhi, 2002. UnitS: IV & V

BOOKS FOR REFERENCE

1. Dharma Prakash Agrawal & Qing-AnZeng, “Introduction to Wireless and Mobile Systems”, Thomson India Edition, 2nd Ed., 2007.
2. Gary. S. Rogers & John Edwards, “An Introduction to Wireless Technology”, Pearson Education, 2007.
3. Vijay. K. Garg, “Wireless Communication and Networking”, Morgan Kaufmann Publishers, 2007.

Sem. III **Hours/Week: 5**
14PIT3114 **Credit: 4**

J2EE

Objective

* To understand the fundamental concepts of the J2EE Technologies and communication of client and server in the programming paradigm, component and framework model.

Unit I **12 HRS**

J2EE OVERVIEW: J2EE and J2SE- The Birth of J2EE - J2EE.J2EE MULTI TIER ARCHITECTURE: The Tier - J2EE Multi-Tier Architecture - Client Tier implementation- Classification of Clients -Web Tier implementation.J2EE BESTPRACTICES: The Enterprise Application-Session Management-Presentation and Processing- Model View Controller.

Unit II **12 HRS**

JAVA REMOTE METHOD INVOCATION:RMI Concept-Remote Interface-Passing Objects-The RMI Process-Sever side -Client side. JAVA INTERFACE DEFINITION LANGUAGE AND CORBA: Java IDL and CORBA- The IDL Interface- The Client side - The Server side - Running the code.JMS:JMS Fundamentals-Flexibility-Components of a JMS Program- Messages - Sending messages to a Queue- Receiving Messages from a Queue.

Unit III **12 HRS**

JSP: JSP - JSP Tags- Variables and Objects- Methods -Control Statements-Loops -Tomcat-Request String -User Session-Cookies-Session Objects. JAVA NAMING AND DIRECTORY INTERFACE API: Naming and Directories-JNDI- Retrieving Attributes from an Object using Directory Services - Naming Operations - Add Binding to a Directory Service - Remove Binding to a Directory Service - Replace Binding to a Directory Service - Renaming a Name in the Directory Service. JAVA MAIL API: Java Mail- Java Mail API and Java Activation Framework -Send Email Messages-Receiving Email Messages - Deleting Email Messages.

Unit IV **12 HRS**

EJB: Enterprise Java Beans- The EJB container- EJB Classes- EJB Interfaces-Referencing EJB- Relationship Elements -Session Java Bean -Stateless vs.Stateful - Creating a Session Java Bean-Entity Java Bean -CMP - BMP - Message Driven Bean - Creating an MDB -The JAR file

Unit V **12 HRS**

STRUTS: Introduction to Struts - Building a Simple Struts Application - The Model Layer - View Layer - Controller Layer - Struts Modules.

TEXT BOOKS

1. Jim Keogh," The Complete Reference J2EE ",Tata McGraw Hill, NewDelhi, 2006. UnitS: I, II, III & IV
2. James Holmes," The Complete Reference Struts", Tata McGraw Hill,New Delhi, 2004. Unit:V

BOOKS FOR REFERENCE

1. McGovern," J2EE 1.4 Bible", Wiley, Chennai, India, 2007.
2. Steven Holzner," Struts Essential Skills",Tata McGraw Hill, 2008.

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Sem. III **Hours/Week: 3**

14PIT3116 **Credit: 2**

Software Lab-VI: J2EE

1. Remote Method Invocation

Servlet

2. Cookies
3. JDBC

JSP

4. Get and Post method
5. Cookies
6. JDBC
7. Bean Class

EJB

8. Session Bean
9. Entity Bean
10. XML Parsing using DOM

Sem. III

14PIT3118 **Credit: 2**

COMPREHENSIVE EXAMINATION

Unit I : C++, Data Structures, and Database Systems
Unit II : Software Engineering, ASP.NET
Unit III : JAVA, Networks

Sem. III **Hours/Week: 4**
14PIT3203B **Credit: 4**

Core Elective-III:

CLOUD COMPUTING

Objective

* To impart the basic concepts of Cloud Computing and its applications.

Unit I **10 HRS**

INTRODUCTION TO CLOUD COMPUTING: Roots of Cloud Computing - Layers and Types of Cloud - Features of a Cloud - Infrastructure Management - Cloud Services - Challenges and Risks. Migrating into a Cloud: Introduction - Broad Approaches - Seven Step Model - Integration as a Service - Integration Methodologies - SaaS.

Unit II **10 HRS**

INFRASTRUCTURE AS A SERVICE: Virtual Machines - Layered Architecture - Life Cycle - VM Provisioning Process - Provisioning and Migration Services - Management of Virtual Machines Infrastructure - Scheduling Techniques - Cluster as a Service - RVWS Design - Logical Design - Cloud Storage - Data Security in Cloud Storage - Technologies.

Unit III **10 HRS**

PLATFORM AND SOFTWARE AS A SERVICE: Integration of Public and Private Cloud - Techniques and Tools - Framework Architecture -Resource Provisioning Services - Hybrid Cloud - Cloud Based Solutions for Business Applications - Dynamic ICT Services - Importance of Quality and Security in Clouds - Dynamic Data Center - Case Studies - Workflow Engine in the Cloud - Architecture - Utilization - Scientific Applications for Cloud - Issues - Classification - SAGA - Map Reduce Implementation.

Unit IV **10 HRS**

MONITORING AND MANAGEMENT: An Architecture for Federated Cloud Computing - Use Case - Principles - Model - Security Considerations - SLA Management - Traditional Approaches to SLO - Types of SLA - Life Cycle of SLA - Automated Policy - Performance Prediction of HPC - Grid and Cloud - HPC Performance Related Issues.

Unit V **10 HRS**

APPLICATIONS: Best Practices in Architecting Cloud Applications in the AWS Cloud - Massively Multilayer Online Game Hosting on Cloud Resources - Building Content Delivery Networks using Clouds - Resource cloud Mashups.

Sem. III **Hours/Week: 4**
14PIT3402 **Credit: 4**

IDC (BS):

BUSINESS TRENDS IN IT

Objective

* To provide awareness about the changes in emerging technologies, applications and systems.

Unit I **10 HRS**

INTRODUCTION: Business and IT - Information Age - Reality Check - Information System - INFORMATION TECHNOLOGIES IN THE MODERN ORGANIZATION: Basic Concepts - Structure and IT Support - IT Support at Different Organization Levels - Managing IT in Organization - IT People and Careers.

Unit II **10 HRS**

ELECTRONIC COMMERCE: Business - to-Customer Applications - Market Research, Advertising and Customer Service -Business-to-Business and Collaborative Commerce Applications - Innovative Applications of E-Commerce - Infrastructure and E-Commerce Support services -Legal and Ethical Issues in E-Commerce.

Unit III **10 HRS**

COMPUTER-BASED SUPPLY CHAIN MANAGEMENT AND INFORMATION SYSTEMS INTEGRATION: Supply Chains and their Management - Supply Chain Problems and Solution - IT Supply Chain Support and Systems Integration - ERP - E-Commerce and Supply Chain Management - Order Fulfilment in E-Commerce.

Unit IV **10 HRS**

DATA, KNOWLEDGE AND DECISION SUPPORT: Management and Decision Making - Data Transformation and Management - Decision Support Systems - Enterprise Decision Support - Data and Information Analysis and Mining - Data Visualization Technologies - Knowledge Management and Organizational Knowledge Bases.

Unit V **10 HRS**

INTELLIGENT SYSTEMS IN BUSINESS: Artificial Intelligence and Intelligent Systems - Expert Systems - Other Intelligent Systems - Intelligent Agents - VIRTUAL REALITY: An Emerging Technology - Ethical and Global Issues of Intelligent Systems.

TEXT BOOKS

1. Turban, Rainer and Potter, “Introduction to Information Technology”, 2nd Ed., Wiley India Pvt. Ltd , New Delhi, 2005.

BOOK FOR REFERENCE

1. WS Jawadekar, “Management Information System”, Tata McGraw Hill Publishing Company Ltd., New Delhi, 1998.

Sem. II **Hours/Week: 4**
14UBC230205 **Credits: 3**

DATA STRUCTURES AND ALGORITHMS

Objective

* To impart fundamental knowledge on data structures and algorithms.

Unit - I **10 Hr**

INTRODUCTION AND OVERVIEW: Introduction - Basic Terminology - Elementary Data Organization - Data Structures - Data Structure Operations. **Arrays**: Introduction - Linear Arrays - Representation - Traversing, Insertion and Deletion. **SEARCHING**: Linear Search - Binary Search.

Unit - II **10 Hr**

LINKED LISTS: Introduction - Linked Lists - Representation of Linked List in Memory - Traversing a Linked List - Searching a Linked List - Memory Allocation, Garbage Collection - Insertion into a Linked List - Deletion from a Linked List.

Unit - III **10 Hr**

STACKS, QUEUES AND RECURSION: Introduction - Stacks - Array Representations of Stacks - Arithmetic Expressions- Polish Notation - Recursion: Factorial Function and Fibonacci Sequence. **QUEUES**:Representation of Queues - Array Representation of Queues.

Unit - IV **10 Hr**

TREES: Introduction - Binary Trees - Representing Binary Tress in Memory - Traversing Binary Trees- Binary Search Tree- Searching and Inserting in Binary Search Trees - Deleting in Binary Search Trees. **SORTING**: Introduction -Insertion Sort - Selection Sort - Merge Sort - Heap Sort.

Unit - V **10 Hr**

THE COMPLETE DEVELOPMENT OF AN ALGORITHM: Algorithms - BasicSteps. ALGORITHM DESIGN METHODS: Sub goals - Hill Climbing and Working Backward - Heuristics - Backtrack Programming - Branch and Bound.

Text Books

1. Seymour Lipschutz, “Data Structures”, Tata McGraw Hill Publishing Company Limited, New Delhi, 2008. UnitS: I, II, III & IV
2. S.E. Goodman and S.T. Hedetniemi, “Introduction to the Design and Analysis of Algorithms”, Tata McGraw Hill, International Edition, 1987. Unit: V

Books for Reference

1. Ellis Horowitz, SartajSahni and Dinesh Mehta, “Fundamentals of Data Structures in C++”, University Press (India) Pvt. Ltd., Hyderabad, 2007.
2. Yashavant P. Kanetkar, “Data Structures Through C++”, BPB Publications, 2003.

Sem. III **Hours/Week: 4**
14UBC330208 **Credits: 3**

UML AND IT ENABLED SERVICES

Objective

* To impart the basic concepts on Unified Modeling Language.

Unit I **10 Hr**

INTRODUCTION TO UML: Importance of Modeling - Principles of Modeling - Object Oriented Modeling - Conceptual Model of the UML- Architecture - Software Development Life Cycle.

Unit II **10 Hr**

BASIC STRUCTURAL MODELING: Classes - Relationships - Common Mechanisms - Diagrams - Class Diagrams.

Unit III **10 Hr**

BEHAVIORAL MODELING: Interactions - Interaction Diagrams - Use cases - Use case Diagrams - Activity Diagrams.

Unit IV **10 Hr**

IT ENABLED SERVICES: Introduction to IT Enabled Services - Meaning of IT Enabled Services - Users of IT Enabled Services - Technology Involved - Deployment Issues in Establishment of IT Enabled Services - Medical, Legal, E-Banking, E-Business.

Unit V **10 Hr**

OPEN SOURCE TECHNOLOGIES:Evolution & Development of OST and Contemporary Technologies - Factors Leading to its Growth - Open Source Initiative (OSI) - Free Software Foundation and the GNU Project - Principle and Methodologies - Contexts of OST (India & International) - Applications of Open Source (Open Source Teaching and Open Source Media) - Risk Factors.

Text Books

1. Grady Booch, James Rumbaugh and Ivar Jacobson. “The Unified Modeling Language User Guide”, Pearson Education, New Delhi, 2004. UnitS: I, II & III
2. Awad and Elias M, “Electronic Commerce: From Vision to Fulfillment”, Prentice Hall of India, New Delhi, 2002. Unit:IV
3. Fadi P. Deek and James A. M. McHugh, “Open Source Technology and Policy”, Cambridge University Press, 2007. Unit: V

BOOKS FOR REFERENCE

1. Fowler and Martin, “UML Distilled”, 3rd Edition, Pearson Education, New Delhi, 2004.
2. Turner, C, “The Information e-conomy: Business Strategies for Competing in the Digital Age”, London. Kogan Page, 2000.
3. Andrew M. St. Laurent, “Understanding Open Source and Free Software Licensing”, O’Reilly Media; First Edition, 2004.

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Sem. V **Hours/Week: 4**
14UBC530214 **Credits: 3**

C# •NET

Objective

* To understand a sound knowledge on the fundamental concepts of the C# programming language.

Unit I **10 Hr**

FUNDAMENTALS: Evaluation of Programming Languages - Overview of .NET Framework - Basic Elements of C# - Navigating the Visual Studio IDE - Menu Bars and Tool Bars - Controls and Properties - Operators and Expressions - Conditional Statements and Looping Structures.

Unit II **10 Hr**

CLASSES AND OBJECTS: Instance Variables and Properties - UML Class Diagram with Properties - Value Types and References Types - Constructors - Inheritances

METHODS: Operator Overloading - Method Overloading

EXCEPTION HANDLING: Try - Catch - Throw.

Unit III **10 Hr**

ARRAY:Array Declaration - Single and Multidimensional Arrays - Passing Arrays - Passing Array by Value & By Reference.

COLLECTIONS:GenericCollection Classes -List - Sorted List.

STRINGS AND CHARACTERS:StringData Type - String Functions

Unit IV **10 Hr**

ADO.NET OVERVIEW: Characteristics of ADO.NET - ADO.NET Object Model

ADO.NET DATA ACCESS: Creating a Connection - Using Command with Data Reader - Updating Data - Accessing Disconnected Data.

Unit V **10 Hr**

LINQ: Introduction -Array of int Values using LINQ - Array of Employee Object using LINQ

FILES AND STREAMS: Files and Streams - Classes Files and Directory - Creating Sequential Access in Text File - Reading Data from a Text File.

Text Book

1. Paul Deitel and Hawey Deitel, “C# 2010 for Programmers”, 4th Ed., Prentice Hall, 2011.

BOOKS FOR REFERENCE

1. C. Xavier, “C# - An Object Oriented Approach”, S.C.Tech Publications (India) Pvt.Ltd, 2001.
2. Rob Stephen, “C# Programming with Visual Studio 2010- 24 hour Trainer”, Wrox Publisher, 2010.
3. “Microsoft C# Language Specification”, WP Publishers & Distributors (P) Limited, 2001.

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Sem. V **Hours/Week: 4**
14UBC530215 **Credits: 3**

HTML5 AND CSS3

Objective

* To introduce the concepts and principles of HTML5 and CSS3 standards, to build dynamic websites.

Unit I **10 Hr**

INTRODUCING HTML5: A Basic HTML5 Template -doctype- HTML Element- Head Element - Defining Page's Structure- Header Element - Section Element - Article Element - Nav Tag Element - Aside Element - Footer Element.

Unit II **10 Hr**

HTML5 SEMANTICS: A New Perspective on Types of Content- The Document Online- New Elements in HTML5 - HTML5 Canvas.

HTML5 TABLES: Table attributes and Elements.

Unit III **10 Hr**

HTML5 FORMS: HTML5 Attributes- HTML5 Form Input Types- New Form Controls in HTML5 - Changes to Existing Form Controls and Attributes.

HTML5 AUDIO AND VIDEO: Video Container Formats - Video Codecs - Audio Codecs - The Markup Attributes - Creating Custom Controls.

Unit IV **10 Hr**

INTRODUCING CSS3: CSS3 Selectors - CSS3 Colors- Drop Shadows - Text Shadow

CSS3 GRADIENTS: Linear Gradients-Radial Gradients - Repeating Gradients.

Unit V **10 Hr**

CSS TRANSFORMS AND TRANSITIONS: Transforms - Transitions - Animations -Embedded Fonts -CSS3 Multicolumn Layouts - SVG and Drag and Drop.

Text Book

1. Alexis Goldstein, Louis Lazaris, Estelle Weyl, "HTML5 & CSS3 for the Real World", SitePoint Pvt. Ltd., 2011

BOOKS FOR REFERENCE

1. Matthew MacDonald, "HTML5: The Missing Manual", O'Reilly, 2011.
2. Kogent Learning Solutions Inc. "HTML5 Black Book: Covers CSS3, JavaScript, XML, XHTML, AJAX, PHP and Jquery", Dreamtech Press, 2011.

Sem. V **Hours/Week: 3**
14UBC530216 **Credits: 2**

Software Lab-V
C# •NET

1. Create a desktop application using various controls
2. Simulate a Scientific Calculator
3. Create a Paint Brush Application
4. Classes and Methods
5. Arrays and strings
6. Generic collections
7. String functions
8. ADO.NET (Connected and Disconnected approach)
9. LINQ
10. Files and Streams

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Sem. V **Hours/Week: 3**
14UBC530217 **Credits: 2**

Software Lab-VI
HTML5 AND CSS3

HTML5

1. Usage of New Semantic Elements
2. Create Page Structure and Navigation
3. Create Form Input and Validation.
4. Create Image onto Canvas.

CSS3

5. Selectors and Colors
6. Text and Drop Shadows
7. Transition- Rotating Box
8. Linear Gradient and Radial gradient.
9. 2D and 3D Animations
10. SVG, Drag and Drop.

Sem. V **Hours/Week: 4**
14UBC530301A **Credits: 4**

Elective-I
MOBILE COMMUNICATION

Objective

* To understand the basic concepts and methods of mobile communication systems.

Unit I **10 Hr**

MOBILE COMMUNICATIONS OVERVIEW: Mobile Communication- Mobile Computing - Mobile Computing Architecture -Mobile System Networks - Data Dissemination - Mobility management - Security.

MOBILE SYSTEMS: Mobile Phones - Smart Systems - Limitations of Mobile Devices

Unit II **10 Hr**

GSM AND SIMILAR ARCHITECTURES: GSM - Services and System Architecture - Radio Interfaces - Protocols - Localization - Calling - Handover - Security - GPRS.

WIRELESS MEDIUM ACCESS CONTROL AND CDMA-BASED COMMUNICATION: Medium Access Control - Introduction to CDMA Based Systems.

Unit III **10 Hr**

MOBILE IP NETWORK LAYER: IP and Mobile IP Network Layers - Packet Delivery and Handover Management - Location Management - Registration - Tunnelling and Encapsulation - Route Optimization.

MOBILE TRANSPORT LAYER:Conventional TCP/IP Transport Layer Protocols - Indirect TCP - Snooping TCP - Mobile TCP.

Unit IV **10 Hr**

MOBILE DEVICES: Device Management - Mobile File Systems - Security.

MOBILE AD-HOC AND SENSOR NETWORKS: Introduction to Mobile Ad-Hoc Network - MANET - Wireless Sensor Network - Applications.

Unit V **10 Hr**

MOBILE APPLICATION LANGUAGES: XML - JAVA -J2ME - JAVA Card.

MOBILE OPEARTING SYSTEMS: Operating System -Windows CE - Symbian OS - Linux for Mobile Devices - Android.

BOOK FOR STUDY

1. Raj Kamal, “Mobile Computing”, Oxford University Press, New Delhi, 2010.

BOOK FOR REFERENCE

1. Jochen Schiller, “Mobile Communication”, Pearson Education, New Delhi, 2008.

Sem. V **Hours/Week: 4**
14UBC530301B **Credits: 4**

Elective-I
WEB TECHNOLOGY

Objective

* To highlight various features about web technologyand developing web based applications.

Unit I **10 Hr**

INTRODUCTION: Internet Principles - Basic Web Concepts - Client / Server Model - Retrieving Data from Internet - HTML - Scripting Languages.

Unit II **10 Hr**

SERVER SIDE PROGRAMMING: Dynamic Web Content - Sever Side Technologies - Dynamic HTML - XML -Server Side Include Directives - Firewalls.

Unit III **10 Hr**

WEB SERVICES: Introducing Web Services - The Web Services Technologies Architecture -UDDI- Public Versus Private Registries -Web Service Description Language (WSDL)

Unit IV **10 Hr**

ONLINE APPLICATIONS: Simple Applications - Online Databases - Monitoring UserEvents - Plug-ins - Database Connectivity - Internet Information Services [IIS] - Internet Commerce.

Unit V **10 Hr**

ONLINE SECURITY AND PAYMENT PROCESSING MECHANISMS: Secure Socket Layer (SSL)- Credit Card Processing Models - Secure Electronic Transaction (SET) -SSL Versus SET - 3D Secure Protocol - Electronic Money.

Text Books

1. R.Bremnath, C.S.Senthil Raja, V.Sivakumar, “Web Technology version 1.0”, Pratheeba Publications, Coimbatore, 2004. UnitS: I, II & IV
2. Frank P. Coyle “XML, Web Services and Data Revolution”, Pearson Education, New Delhi, 2007. Unit: III
3. Achyut S. Godbole, AtulKahate, “Web Technologies”, TMG, New Delhi, 2003. Unit: V

BOOKS FOR REFERENCE

1. Xavier.C,”Web Technology and Design”, New Age International Publishers, New Delhi, 2003.

Sem. VI **Hours/Week: 5**
14UBC630220 **Credits: 4**

ASP•NET

OBJECTIVE

* To provide fundamental concepts of ASP.NET programming and a brief introduction about XML.

Unit I: INTRODUCTION **12 Hr**

The •NET Framework - Learning .NET Languages - Understanding Namespaces & Assemblies - Setting up ASP.NET and IIS. USING VISUAL STUDIO.NET: Starting VS.NET Project - Web Form Designer - Writing Code

Unit II: WEB CONTROLS **12 Hr**

Stepping Up to Web Controls - Web Control Classes - AutoPostBack and Web Control Events. VALIDATION & RICH CONTROLS: Calendar - AdRotator - Validation Controls - Server Side Validation - Understanding Regular Expression.

Unit III: STATE MANAGEMENT **12 Hr**

View State - Transferring Information-Cookies - Session State - Session State Configuration - Application State. ADO.NET OVERVIEW: Characteristics of ADO.NET - ADO.NET Object Model.

Unit IV: ADO•NET DATA ACCESS **12 Hr**

Creating a Connection - Using Command with Data Reader - Updating Data - Accessing Disconnected Data. DATALIST AND DATAGRID - Using Templates with DataList - Data Binding with Multiple Templates - Selecting Items - Editing Items - Paging with DataGrid - Sorting with DataGrid.

Unit V: USING XML **12 Hr**

Basics - XML Classes - XML Validation - XML Display and Transforms - XML in ADO.NET. CACHING AND PERFORMANCE TUNING: Caching - Data Caching

BOOK FOR STUDY

1. Mathew MacDonald, "ASP.NET: The Complete Reference", Tata McGraw Hill Ltd., New Delhi, 2008.

BOOK FOR REFERENCE

2. Dr. C. Muthu, "ASP.NET", Shalom InfoTech Pvt. Ltd., 2011.

Sem. VI **Hours/Week: 3**
14UBC630222 **Credits: 2**

Software Lab-VIII: ASP•NET

1. Form Design using Various Web Controls
2. Ad Rotator and Calendar Control, Login Control (Page Should Expire after 3 wrong attempts)
3. Validation Controls
4. Cookie Manipulation
5. State Management (using Session and Application)
6. Data Retrieval, Updating using ADO.NET (using Stored Procedure)
7. Template Creation using DataList and DataGrid
8. Sorting and Paging using DataGrid
9. Day Planner Preparation using XML and ADO.NET
10. Data Caching

Sem. VI
14UBC630224 **Credits: 2**

COMPREHENSIVE EXAMINATION

UNIT-I : C, Digital Computer Fundamentals
UNIT-II : C++, Data Structures and Algorithms
Unit-III : RDBMS, UML
UNI-IV : Java, Operating Systems
UNI-V : Computer Networks, Web Technology

Sem. VI **Hours/Week: 4**
14UBC630303A **Credits: 4**

Elective-II
ANDROID PROGRAMMING

Objective

* To understand the concepts and learn the tools for developing applications on mobile platforms like Android.

Unit I **10 Hr**

INTRODUCTION TO MOBILE DEVELOPMENT: Mobile Computing - History of Mobile Environments - Early Mobile Phones to Smartphones and Tablets - Development for Mobile Environments -Differences from Traditional Application Development - Trends in Mobile Development.

Unit II **10 Hr**

MOBILE DEVELOPMENT: Advantages - Limitations -Features Useful for Mobiles - Geolocation- Offline Web Applications - Offline Web Storage - Animations - 2D/3D Graphics - Audio/Video - FRAMEWORKS: HTML5 - Phone Gap (Apache Cordova) Framework and jQuery Mobile Framework.

Unit III **10 Hr**

INTRODUCTION TO ANDROID: Android Overview - Features Architecture- Applications- Application Frameworks - Libraries - Runtime - Kernel- Android Ecosystem - Application Stores - Publishing.

Unit IV **10 Hr**

ANDROID DEVELOPMENT TOOLS: Android SDK - Android Emulator - Development on Hardware Devices. BASIC ANDROID DEVELOPMENT: Writing Android Applications - Activity Lifecycle - Multi Device Support.

Unit V **10 Hr**

ANDROID DEVELOPMENT[Contd.]: Fragments - Data Storage - Intents - Data Sharing - Audio Playback - Photo Capture - Best Practices for Development - Security - Distribution and Monetizing.

Text Book

1. Ed Burnette, "Hello Android: Introducing Google's Mobile Development Platform", The Pragmatic Programmers, New Delhi, 3rd Ed., 2010.

Book for reference

1. Wei-Meng Lee, "Beginning Android 4 Application Development", Wiley India Pvt. Ltd., 2011.

Sem. VI **Hours/Week: 4**
14UBC630303B **Credits: 4**

Elective-II
FUNDAMENTALS OF LINUX

OBJECTIVE

* To understand the principles of Linux.

Unit I: LINUX INTRODUCTION AND INSTALLATION **10 Hr**

Linux - Advantages -RedHatLinux - New Features -Installation ProceduresandMethods-Using Desktop - GNOME - KDE. ACCESSINGAND RUNNING APPLICATIONS: Installing Red Hat Linux Applications -Running Window Application -Running Window, DOS and Macintosh Applications.

Unit II: MULTIMEDIA IN RED HAT LINUX **10 Hr**

Audio - Webcams and TV cards - digital camera - creating music CDs.TOOLS FOR USING INTERNETAND WEB: Internet Tools - Browsing the Web - Communicating with E-mail -Using Remote Login, Copy, and Execution.

Unit III: SYSTEM ADMINISTRATION **10 Hr**

RootLogin -superuser -GUI Tools, Commands and Log Files -Configuring Hardware -File System and Disk Management -Monitoring Performances.

Unit IV: SETTINGUP AND SUPPORTING USERS **10 Hr**

Creating User Accounts - Setting User Defaults - Creating Portable Desktops - Providing Support to Users - Modifying Accounts - Deleting User Accounts - Checking Disk Quotas - Sending Mail to All Users.

Unit V: SECURITY ISSUES **10 Hr**

Hacker versus Cracker -Password Protection -Protectionfrom Break-in - Filtering Network Access - Firewalls - Detecting Intrusions from Log Files - Encryption Techniques.

Text Book

1. Christopher Negus "Red Hat Linux 8 Bible", WILEY -Dreamtech India Pvt. Ltd, New Delhi, 1st Ed., 2003

Book for Reference

1. Thomas Schenk, "Red Hat Linux System Administration", Techmedia, New Delhi, 2003.

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Sem. IV **Hours/Week: 4**
14UMA430301A **Credits: 4**

GRAPH THEORY

Objectives

- To introduce the notion of graph theory and its applications.
- To learn the techniques of combinatorics in Graph Theory.

UNIT-I:

Introduction - The Konigsberg Bridge Problem - Graphs and subgraphs Definition and Examples - Degrees - Subgraphs - Isomorphism. (Sec 1.0, 1.1, 2.0, 2.1, 2.2, 2.3, 2.4)

UNIT-II:

Matrices - Operations on Graphs - Walks, Trails and Paths - Connectedness and Components - Euler Graphs. (Sec 2.8, 2.9, 4.1, 4.2, 5.0, 5.1)

UNIT-III:

Hamiltonian Graphs (Omit Chavatal Theorem) - Characterization of Trees - Centre of Tree. (Sec 5.2, 6.0, 6.1, 6.2)

UNIT-IV:

Planarity: Introduction - Definition and Properties - Characterization of Planar Graphs. (Sec 8.0, 8.1, 8.2)

UNIT-V:

Directed Graphs: Introduction - Definitions and Basic Properties - Some Applications: Connector Problem - Kruskal's algorithm - Shortest Path Problem – Dijkstra's algorithm. (Sec 10.0, 10.1, 11.0, 11.1, 11.2)

Textbook

1. S. Arumugam and S. Ramachandran, Invitation to Graph Theory, SciTech Publications (India) Pvt. Ltd., Chennai, 2006.

References

1. Narsingh Deo, Graph Theory with applications to Engineering and Computer Science, Prentice Hall of India, 2004.
2. Gary Chartrand and Ping Zhang, Introduction to Graph Theory, Tata McGraw-Hill Edition, 2004.

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Sem. II
14PMA2109 **Credits: 2**

HISTORY OF MATHEMATICS

Objectives

- To present the lives of Mathematicians and their dominating ideas governing vast tracts of Mathematics as it exists to-day.
- To introduce the students to some of the genesis of mathematical ideas.

Unit I

The Ancient Greeks - Pythagoras - Introduction to Pythagorean Ideas - Euclid - Introduction to Euclid - Archimedes - The Genius of Archimedes- Zeno's Paradox and the Concept of Limit - The Context of the Paradox? - Consideration of the Paradoxes - Decimal Notation and Limits - Infinite Sums and Limits - Finite Geometric Series.

Sections: 1.1,1.1.1,1.2,1.2.1,1.3,1.3.1, 2.1, 2.3, 2.4-2.6

Unit II

The Arabs and the Development of Algebra - The Development of Algebra - Al-Khowarizmi and the Basics of Algebra - The Life of Al-Khwarizmi - Omar Khayyam and the Resolution of the Cubic - Cardano, Abel, Galois, and the Solving of Equations - A Particular Equation - The General Case - The Brief and Tragic Lives of Abel and Galois - The Work of Abel and Galois in Context - Rene Descartes and the Idea of Coordinates - Introductory Remarks - The Life of Rene Descartes - The Real Number Line - The Cartesian Plane - Coordinates in Three-Dimensional Space.

Sections: 4.2, 4.2.1, 4.2.2, 4.2.4, 5.6, 5.7, 5.7.1, 5.7.2, 5.8.1, 5.9, 6.0-6.3, 6.5

Unit III

The Invention of Differential Calculus - The Life of Fermat - Fermat's Method - Fermat's Lemma and Maximum/Minimum Problems - Complex Numbers and Polynomials - Progenitors of the Complex Number System - Cardano - Argand - Cauchy - Riemann - Complex Number Basics - The Fundamental Theorem of Algebra - Finding the Roots of a Polynomial - Cauchy and the Foundations of Analysis - Why Do We Need the Real Numbers?

Sections: 7.1, 7.2, 7.4, 8.2, 8.2.1-8.2.5, 8.3, 8.4, 8.5, 10.1, 10.2

Unit IV

The Prime Numbers - The Sieve of Eratosthenes - The Infinitude of the Primes - Dirichlet and How to Count - The Life of Dirichlet - The Pigeonhole Principle - Riemann and the Geometry of Surfaces - Introduction - Georg Cantor and the Orders of Infinity - Introductory Remarks - An Uncountable Set - Countable and Uncountable - The Existence of Transcendental Numbers.

Sections: 11.1, 11.2, 12.1, 12.2, 13.0, 14.1, 14.2.1, 14.2.2, 14.3

Unit V

Henri Poincare, Child Prodigy - Introductory Remarks - Emmy Noether and Algebra - The Life of Emmy Noether - Emmy Noether and Abstract Algebra: Groups - Emmy Noether and Abstract Algebra: Rings - The Idea of an Ideal - Cryptography - What is Cryptography?

Sections: 16.1, 18.1, 18.2, 18.3, 18.3.1, 20.3

Textbook

1. Steven G. Krantz, An Episodic History of Mathematics, Mathematical Association of America, 2010.

References

1. C.B. Boyer and U. Merzbach, History of Mathematics, John Wiley & Sons, New York, 1988.
2. E.T. Bell, Men of Mathematics, Penguin Books Ltd., Hardmondsworth, Middlesex, UK, 1953.

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Sem. II **Hours/Week: 4**
14PMA2401 **Credits: 4**

IDC-II (WS):

MATLAB

Objectives

- To introduce the Mathematical software MATLAB for high-performance numerical computations and visualization.
- To learn MATLAB built-in functions provided to solve all type of scientific problems.

Unit I:

Basics of MATLAB

Basics, windows, Variables, File types, Matrices and Vectors, Matrix manipulation, Matrix and Array Operations.

Unit II:

Matrix functions

Arithmetic operations, Relational operations, Logical operations, Elementary math functions, Matrix functions, Manipulating character strings, Array Operations, Vectorization.

Unit III:

Built-in functions

Inline functions, Anonymous functions, Built-in functions, Complex Arithmetic, Solving linear systems, Eigen Values and Vectors, Calculus.

Unit IV:

MATLAB programming

Script Files, Function Files, Curve Fitting and Interpolation, Numerical Integration, Ordinary Differential Equations, Statistics, Nonlinear Algebraic Equations.

Unit V:

Graphics

Basic 2-D Plots, Specialized 2-D plots, 3-D Plots, 3-D Surface Graphics.

Textbook

1. Rudra Pratap, Getting started with MATLAB 7, Oxford University Press, 2008.

References

1. Brain R Hunt, Ronald L Lipsman, Jonathan M Rosenberg, A Guide to MATLAB for Beginners and Experienced Users, Cambridge University Press, 2003.

14 PBA 1101 - PRINCIPLES AND PRACTICE OF MANAGEMENT

` **5 Hours/5credits**

COURSE OBJECTIVES

1. To make the students learn the basic concepts and principles of management.
2. To make them understand the process and functions of management.
3. To equip the students with the tool and strategies for effective management.
4.

UNIT I	:	Management: Meaning – Nature – Purpose - Management as Science and Art - Evolution and Principles of Management - Approaches to Management - Functions of Management, Managerial Skills. Recent Trends in Management: Strategic, Global.	**(13 Hrs)**
UNIT II	:	Planning: Nature - Purpose - Types- Steps in Planning- Management by Objectives- Nature and Purpose of Strategies and Policies - Strategic Planning Process - Decision Making - Approaches to Decision Making.	**(13 Hrs)**
UNIT III	:	Organising : Meaning, Nature, Scope and Purpose - Organizational Structure - Departmentation - Types Of Departmentation - Line And Staff Function - Delegation And Decentralization.	**(13 Hrs)**
UNIT IV	:	Directing: Human Factors In Managing - Motivational Theories: Content Theories; Theory X And Theory Y - Maslow's Need Hierarchy Theory - Alderfer's ERG Theory, Mcclelland's Needs Theory, Herzberg's Two Factors Theory, Process Theories; Vroom's Expectancy Theory - Goal Setting Theory, Equity Theory.	**(13 Hrs)**
UNIT V	:	Controlling: Meaning And Nature Of Control- Basic Control Process -Types Of Control: Feed Forward Or Preventive Control- Control Of Overall Performance - Profit And Loss Control- Control Through Return On Investment- Requirements For Effective Control - Control Techniques: Budgetary And Non Budgetary Control.	**(13 Hrs)**

TEXT BOOK

Koontz, Harold and Weihrich,.Heinz. (2011). **Essentials of Management: An International Perspective**. (8 ed.). New Delhi: Tata McGraw-Hill Publishing Company Ltd.

REFERENCE BOOKS

1. Tripathi, P C and P N Reddy. (2012). **Principles of Management.** (2 ed.). New Delhi: Tata McGraw-Hill Publishing Company Ltd.
2. Bose, Chandra. (2011). **Principles of Management.** (2 ed.). New Delhi: Prentice Hall of India.
3. Moshal ,B.S. (2011). **Principles of Management**. (2 ed.). New Delhi: Ane books

14 PBA 1104 - PERSONAL GROWTH LAB

5 Hours/5credits

COURSE OBJECTIVES

1. To facilitate the process of self discovery and develop self identity for self growth.
2. To enable the students become aware of their potentials and skills needed for an efficient manager and sensitize them to develop the same.
3. To enable the students to develop personal growth plan and acquire managerial skills.

UNIT I	**:**	Soft Skills: Nature and importance, Skills employers look for, Types of skills, EQ framework, KSA framework, Identifying talents and skills, Developing skill inventory.	**(13 Hrs)**
UNIT II	**:**	Self Discovery: Self and personality, Dimensions of personality, Process of self knowledge; Multiple Intelligences, Personality Assessment Tests, SWOT Analysis, JOHARI Window, Looking Glass approach to self discovery, NLP, Enneagram, Personality types.	**(13 Hrs)**
UNIT III	**:**	Personal Development: Developing self esteem, Personal value analysis and formation, Developing positive attitude, Forming healthy habits, Managing emotions, Managing stress, Becoming an assertive personality.	**(13 Hrs)**
UNIT IV	**:**	Personal Effectiveness: Setting goals and objectives for skill enhancement, Time management for skill acquiring, Personal Development Plan, Identifying styles of learning, Decision making skills.	**(13 Hrs)**
UNIT V	**:**	Interpersonal Relationship: Perceptual difference, Communication barriers, Frame of mind, Handling interpersonal conflict, Empathy, Transactional Analysis and Life Positions, Rational Emotive Therapy (RET), Supportive communication, Problem solving skills.	**(13 Hrs)**

REFERENCE BOOKS

1. Covey, Stephen. (1999). **The Seven Habits of Highly Effective People. London**: Simon & Schuster UK Ltd.
2. Gallagher, Kevin. (2010).**Skills Development for Business and Management Students.** New Delhi: Oxford University Press.
3. McGrath, E.H. (2007). **Basic Managerial Skills for All.** New Delhi: Prentice Hall.

14 PBA1107 - COMMUNICATIVE ENGLISH FOR MANAGERS

4 Hours/4credits

COURSE OBJECTIVES

1. To motivate students and cause them to believe that Communicating in English can be learnt easily with practice.
2. To create in them the self confidence required to speak and write in English.
3. To help them strategically understand the nuances behind speaking and writing the English Language.

UNIT I : Developing English language skills - Essentials of Grammar - Applied Grammar and usage - Common Errors and misappropriations - Basics of Phonetics - Building Advanced Vocabulary. **(10 Hrs)**

UNIT II : Listening Skills - Developing Effective Listening Skills - Important facts and Advantages of Good Listening - Barrier to effective listening - Techniques of effective listening. **(10 Hrs)**

UNIT III : Speaking Skills - Nonverbal Communication - Body language - Dynamics of presentations - Conversations, Dialogues and Debates. **(10 Hrs)**

UNIT IV : Reading Skills - The Art of effective reading - overcoming common obstacles - methods of reading - Reading Comprehension. **(10 Hrs)**

UNIT V : Writing Skills - Art of condensation - Note making - Paragraph writing - Report writing - Editing - Advantages. **(10 Hrs)**

REFERENCE BOOKS

1. Kumar, Sanjay & Pushplata. (2011). **Communication Skills**. (1 ed.). New Delhi: Oxford University Press.
2. Anne Seaton Y. H. Mew. (2010). **Basic English Grammar.** Learner's Publication.
3. Howard Sargeant. (2007). **Basic English Grammar for English Language Learners.** Saddle Back Educational Publishing.
4. Murphy, Raymond. (2004). **Essential Grammar in use** (2 ed.). Cambridge University Press.

14 PBA 2101- ORGANIZATIONAL BEHAVIOUR

4 Hours/4 Credits

COURSE OBJECTIVES

1. To familiarize the students with the basic concepts of Organizational Behaviour.
2. To impart to the students, the values of individual and group behavior in Management.
3. To enable the students to learn the different styles of leadership.

UNIT I : Introduction: Concept, Importance, Scope - Disciplines contributing to OB- Models of OB: autocratic, custodial, supportive, collegial and SOBC - Challenges and Opportunities for OB. **(11 Hrs)**

UNIT II : Individual Behaviour: Personality types-theories-Factors influencing personality, Perception: process, differences, workplace diversity, Attitudes and values: Characteristics, Employee Commitment, Employee Morale, Learning: Types of learners- learning process-theories- Behaviour modification . **(11 Hrs)**

UNIT III : Group Behaviour: Groups in organizations; Formation-Influence - Group dynamics-Emergence of informal leaders-Group decision making techniques, Team building, Leadership: importance, meaning, styles, skills of a leader, Employee Counseling. **(11 Hrs)**

UNIT IV : Conflict Management: Conflict: Definition-Process, Types of conflict - Intrapersonal-Interpersonal-Organizational - Constructive and Destructive conflict. Conflict management: Win-win approach - Balancing work and Life, Power and Politics: Meaning, bases, types, Politics - power in action - Negotiation: Strategies, Process, Third party negotiation **(11 Hrs)**

UNIT V : Organizational Culture and Development: Organizational culture, Meaning, Functions, importance, Organizational Climate, Importance.- Factors affecting organizational climate - Job satisfaction: Determinants-Measurements-Influence on behavior. Organizational change: Importance-the change process-Resistance to change- organizational development-Work Life Balance- employee engagement- Learning Organizations. **(11 Hrs)**

TEXT BOOK

Robbins,P.Stephen, et al. (2013). Organizational Behavior (15 ed.), New Delhi: Pearson Publications.

REFERENCE BOOKS

1. Luthans, Fred.(2005). Organizational Behavior*(*10 ed.**).** New Delhi: Tata McGraw-Hill Publishing Company Ltd**.**
2. McShane, Steven and Glinow ,Von Mary. (2009). Organizational Behavior, **(**5 ed.). New Delhi: Mc-Graw Hill Publishing Company Ltd.

14 PBA 2105 - BUSINESS INFORMATION SYSTEMS

5 Hours/5credits

COURSE OBJECTIVES

1. To stress the need and use of information in global business.
2. To introduce to the students, various information systems for management.
3. To help the students understand the modern trends in collecting and disseminating information.

UNIT I : Information systems in Business, Data Resource Management: Trends - Types - Managerial challenges - System concept - Information systems - Components - Resources - Strategic IT - Virtual company - Knowledge creating company - Data Resource Management- Data Concepts - Data base Structures - Managing Data Sources. **(12Hrs)**

UNIT II : Functional business systems, Enterprise Business systems : - Functional business systems - Enterprise collaboration systems - Marketing systems - computer integrated manufacturing - HRM and the internet - On line Accounting systems - Financial Management Systems - Enterprise Business systems - CRM , ERP,SCM - Benefits and challenges of CRM,ERP,SCM **(14Hrs)**

UNIT III : E- Commerce, DSS: E- Commerce - E Payment processes - Applications and issues - DSS - EIS - Enterprise portals - Developing IT Strategies - KMS - AI Technologies in Business - Expert system- Developing ES - Neural networks - Fuzzy logic systems - Genetic Algorithms -Intelligent Agents. **(13Hrs)**

UNIT IV : Development Processes : Planning Fundamentals - Business IT Planning - Models and planning - System Development Life Cycle - Analysis - Design -End user development - Implementing business systems - Evaluation -Implementation Activities. **(13Hrs)**

UNIT V : Security Systems: Security measurement of IT - Tools of security management, System controls and audits- Managing Information Technology - Security and ethical challenges. **(13Hrs)**

TEXT BOOK

O' Brien A. James, M. Markas George, Behl Ramesh. (2010). **Management Information Systems** (9 ed.). New Delhi: Tata McGraw Hill Education.

REFERENCE BOOKS

1. Laudon and Laudon. (2006). **Management Information System.** (9 ed.). New Delhi: Prentice Hall of India Private Limited.
2. Jaiswal Mahadeo, Mital Monika. (2010). **Management Information Systems.** New Delhi: Oxford University Press.
3. Joseph P.T S.J (2010). **E-Commerce an Indian Perspective**.(3 ed.). New Delhi: Prentice Hall of India Private Limited.

14 PBA2107 - BUSINESS COMMUNICATION

4 Hours/4 credits

COURSE OBJECTIVES

1. To help the students acquire the skills required for communicating effectively in professional situations.
2. To train the students to handle communication using new technology.
3. To understand the communication practices prevalent in contemporary business scenario.

UNIT I : Communication Basics: Meaning, Importance, Objectives, Principles of Communication, Forms of communication - Communication process, Barriers of Communication, Techniques of effective communication, Communication etiquette, Communication Network in an organization. **(10 Hrs)**

UNIT II : Public Speaking - Speech of introduction, Speech of thanks, Extempore speech, Theme speech, Presentations, Managing meetings and conferences - Telephonic skills - Situational Dialogues **(10 Hrs)**

UNIT III : Business Correspondence - Business Letters, Principles, kinds components, Strategies for good business letters, writing memos, minutes writing - Resume writing, Business reports purpose & types, Parts of a report, Steps in writing a report. **(10 Hrs)**

UNIT IV : Group Discussions: Methodology - Guidelines - Improving Group performance - Interview skills- Presentation skills-Meetings and Conferences - Minutes. **(10 Hrs)**

UNIT V : Technology enabled business communication - Designing & Delivering oral and online presentations, E-mail writing - Web conference - Webinars - Corporate communication. **(10 Hrs)**

REFERENCE BOOKS

1. Raman Meenakshi and Singh Prakash. (2010). **Business Communication.** New Delhi: Oxford University Press.
2. Kumar Sanjay and Pushphlata. (2011). **Communication Skills.** (1 ed.). New Delhi: Oxford University Press.
3. Pal Rajendra & Korlahalli J.S. (2007). **Essentials of Business Communication.** (10 Revised ed.) New Delhi: Sultan Chand & Sons.
4. Soundararaj Francis. (2007). **Speaking and Writing for Effective Business Communication.** New Delhi: McMillan Publisher India Ltd.

14 PBA 2403 - CREATIVITY AND INNOVATION (IDC)

2 Hours / 2 Credits

COURSE OBJECTIVES

1. Understand the major barriers to managing creativity and innovation.
2. Understand and use techniques to generate ideas and tools for creativity.
3. Apply creativity to life in individual, group and organisational settings.

UNIT I	**:**	Managing Creativity: Understanding Creativity, Nature of creativity and innovation, Need for creativity	**(5 Hrs)**
UNIT II	**:**	Barriers to creativity and innovation, Characteristics of a creative person, Programmed thinking and Lateral thinking, Creative Frame of mind	**(5 Hrs)**
UNIT III	**:**	Unblocking creative potential, Creative person, Stages in creative process	**(5Hrs)**
UNIT IV	**:**	Creativity Techniques: Brainstorming, Out of the box thinking, Six Thinking hats, Forced Relationship, Morphological Analysis, Attribute Listing, Concept Fan Technique, Reframing Matrix, Disney Creative Strategy, TRIZ	**(5 Hrs)**
UNIT V	**:**	Managing Creativity in Organisations, Strategies for Innovation, Creative persons and organizations-case studies	**(5 Hrs)**

REFERENCE BOOKS

1. Gelb, Michael J. (2004). **How to think like Leonardo DaVinci**. Seven Steps to Genius Every Day: Delta Books: New York.
2. Sawyer, R. Keith. (2008). **Group Genius: the Power of Collaboration**: Basic Books: New York.
3. Tharp, Twyla. (2003). **The Creative Habit: Learn it and Use it for Life:** Simon & Schuster: New York.
4. Weston, Anthony. (2007). **Creativity for Critical Thinkers**: Oxford University Press:London.
5. Edward De Bono. (1985). **Six Thinking Hats. Little**: Brown & C: New York.

14 PBA 3403 - INTRODUCTION TO TAX LAWS (IDC)

2 Hours / 2 Credits

COURSE OBJECTIVES

1. To help the students to understand the basic tenets of Indian Tax Laws.
2. To highlight the important provisions in direct and indirect taxes and their applications in business.

UNIT I	**:**	Fundamental concepts and principles of income tax - Residential status - Types of persons - Previous year and assessment year - Tax avoidance and evasion - Tax fees and cess - Direct and indirect tax	**(5 Hrs)**
UNIT II	**:**	Heads and sources of income - Salary, House property, business, capital gains and other sources Gross total income and calculation of tax payable - Exemption, deductions and rebates	**(5 Hrs)**
UNIT III	**:**	Advance tax and Tax deducted at source - Procedure for assessment of Individuals, partnership firms and joint stock companies - Self assessment and Best judgment assessment	**(5 Hrs)**
UNIT IV	**:**	Features of Indirect Tax. Constitutional validity. Indirect Tax Laws, administration and relevant procedures registration	**(5 Hrs)**
UNIT V	**:**	Basic provisions relating to excise, customs, sales and service tax laws - Filing of returns, rates of tax, and assessment.	**(5 Hrs)**

The subject covers only theoretical aspects

REFERENCE BOOKS

1. Datey V.S. (2012). **Elements of Indirect Taxes**. (29 ed.). Taxmann Allied Services Private Ltd.
2. Singhania K. Vinod and Singhania Monica. (2013). **Students Guide to Income Tax**. (49 ed.). Taxmann Allied Services Private Ltd.

14 PBA 3404 - MARKETING ANALYTICS (IDC)

2 Hours / 2 Credits

COURSE OBJECTIVES

1. To enable the students to understand the fundamental concepts of marketing research methods.
2. To help the students to apply the analytical tools and make marketing decisions.

UNIT I : The Marketing Research Industry, The Marketing Research Process, Research Design. **(5 Hrs)**

UNIT II : Simple Tabulation and Cross-Tabulation - The Chi-Squared Test for Cross-tabulations - SPSS Commands. **(5 Hrs)**

UNIT III : ANOVA and the Design of Experiments - Applications, Methods Variables - Experimental Designs - SPSS Commands. **(5 Hrs)**

UNIT IV : Factor Analysis for Data Reduction - Application Areas - SPSS Commands. **(5 Hrs)**

UNIT V : Cluster Analysis for Market Segmentation - Application Areas - SPSS Commands. **(5 Hrs)**

TEXT BOOK

Nargundkar Rajendra. (2011). **Marketing Research: Text and Cases**. (3 ed.). New Delhi: The McGraw-Hill Companies.

REFERENCE BOOKS

1. Malhotra, Naresh K., and Satyabhushan Dash. (2011). **Marketing Research: An Applied Orientation.** New Delhi: Pearson Education.

2. Zikmund, William G, and Barry J. Babin. (2010). **Essentials of Marketing Research.** New Delhi: Cengage Learning.

14 PBA 3331 - TRAINING AND DEVELOPMENT

4Hours/4credits

COURSE OBJECTIVES

1. To make the students understand the concept of training, needs, and its importance.
2. To help them to design corporate training programme.
3. To enable them to cope with the learning process and the training need assessment.

UNIT I : Training and development: concept of training- role, need, and importance of training -on the job training- role of stake holders in training - Feedback on training effectiveness. **(11 Hrs)**

UNIT II : Learning: learning styles, process - features -need for integrated approach -methods - factors influencing learning process-training needs assessment—approaches to training needs-factors affecting performance-levels of training needs. **(11 Hrs)**

UNIT III : Training programme: factors in designing training programme-check list for designing training programme -training programme delivery- making the training programme functional- empowering the group-concluding the programme-qualities of a professional trainer. **(11 Hrs)**

UNIT IV : Methods of training: importance-functions-and factors influencing the choice of a training method-developing audio visual materials-using various methods like fonts, colour, and graphs-common forms of visual aid-Characteristics of effective of course materials-printed materials-developing training support materials. **(11 Hrs)**

UNIT V : Measuring the impact of training: need for result based training- trend towards measurement of training-developing results based approach-levels of training: The Kirkpatrick Four Level Approach-Kaufman's five levels of evaluation of training impact- the CIRO Approach to evaluate training method-and the Philip's Five Level ROI frame work to evaluate training impact. **(11 Hrs)**

TEXT BOOK

Sahu R. K. (2005). **Training for Development.** (1 ed.) New Delhi: Excel Books.

REFERENCE BOOKS

1. Lynton P Rolf and Udai Pareek, (2011). **Training for Development.** New Delhi: Vistaar Publications.

2. Robbins P Stephen and Hunsaker L Philip. (2008). **Training in Interpersonal Skills**. New Delhi: PHI.

14 PBA 3334-COUNSELLING SKILLS FOR MANAGERS

4Hours/4credits

COURSE OBJECTIVES

1. To introduce to the students the concept, definition and need for Counselling.
2. To familiarize the students the emerging areas of Counselling.
3. To equip the students on the skills and techniques of Counselling.

UNIT I : Counselling: meaning, objectives, Qualities required of a counselor. Theoretical approaches of counselling. **(11 Hrs)**

UNIT II : Counselling skills and its process: Skills, Relationship, Sympathy Vs Empathy and problem solving, decision making, behavior modification skills, Process, Steps, Techniques and Interventions. Models in counselling - Gerad Agents Model, Skill Model. **(11 Hrs)**

UNIT III : Life span Counselling: Counselling with different age groups. Work place Counselling. **(11 Hrs)**

UNIT IV : Counselling for managing changes: Migrants, Refugees and organizational changes - Counselling at different situations - Trauma care, Communal riots, Rape Victims, broken family, Alcoholics and their family, suicide attempts and AIDS victims. **(11 Hrs)**

UNIT V : Ethics in counselling : Code of Ethics and Practice of Counselling. Issues and Situations. **(11 Hrs)**

TEXT BOOKS

1. Carroll Michael. (1996). **Workplace Counselling: A Systematic Approach to Employee Care**. New Delhi: Sage publications.
2. Narayana Rao, S.(1991). Counselling & Guidance. (2 ed.). New Delhi: Tata McGraw-Hill Publishing company Ltd.

REFERENCE BOOKS

1. Phil Joyee & Charlotte Sills. (2002). **Skills to Gestalt Counseling and Psychotherapy**. New Delhi: Sage Publications.
2. Windy Dryden &Ray Wolfe.(1996). **Handbook of Counseling Psychology**. New Delhi: Sage Publications.
3. Dave Mearns,(1997). **Person-centered Counseling Training**. New Delhi: Sage Publications.

14 PBA 3343 - INFORMATION SYSTEM AUDIT

4Hours/4 Credits

COURSE OBJECTIVES

1. To familiarize the students with the basic knowledge of Systems Audit.
2. To expose the students to the various IS Audit techniques and services.
3. To enable the students to learn the various processes and procedures used in various organizations.

UNIT I : Technology and Audit : IT Audit Function Knowledge - IT Risk and Fundamental Auditing Concepts - Standards and Guidelines for IT Auditing - Internal Controls Concepts Knowledge - Risk Management of the IT Function - Audit Planning Process - Audit Management. **(10 Hrs)**

UNIT II : AEPM: Audit Evidence Process Management - Audit Reporting Follow up - Strategic Planning - Management Issues - Support Tools and Frameworks - Governance Techniques. **(11 Hrs)**

UNIT III : Information Technology and Audit: Impact of Information Technology on the Business Processes and Solutions- Audit and Control of Purchased Packages and Services- Audit Role in Feasibility Studies and Conversions- Audit and Development of Application Controls **(11 Hrs)**

UNIT IV : Technical Infrastructure and Services: Technical Infrastructure Service Center Management- Information Assets Security Management- Logical Information Technology Security- Applied Information Technology Security- Physical and Environmental Security. **(12 Hrs)**

UNIT V : Fraud Detection and Recovery: Disaster Recovery Planning- Foiling the System Hackers- Preventing and Investigating Information Technology Fraud. **(11 Hrs)**

TEXT BOOK

E. Cascarino Richard. (2012). **Auditor's Guide to IT Auditing**. (2 ed.). Wiley Publication.

REFERENCE BOOKS

1. Senft Sandra, Frederick Gallegos et.al. (2012). **Information Technology Control and Audit**. (4 ed.). CRC Publications.

2. Davis Chris, Mike Schiller et.al. (2009). **IT Auditing: Using Controls to Protect Kimball Ralph**, et al, New Delhi: John Wiley,.

14 PBA 3345 - ENTERPRISE RESOURCE PLANNING FOR MANAGEMENT

4Hours/4 Credits

COURSE OBJECTIVES

1. To enable the students understand the concept of ERP applications
2. To highlight the need for ERP implementation in the functional areas of business.
3. To expose the students to various ERP packages used by different industries.

UNIT I : Introduction, Technology: Introduction to ERP, Risks of ERP - Benefits of ERP - ERP and Related Technologies - Business Intelligence - Business Process Reengineering - OLAP - Product Life Cycle Management - Advanced Technology and ERP Security **(11 Hrs)**

UNIT II : Implementation: Implementation Challenges - ERP Implementation Strategies - ERP Implementation Life Cycle - Package Selection - Methodologies - ERP Projects Teams - Data Migration - Project management and monitoring - Post Implementation Activities. **(11 Hrs)**

UNIT III : ERP Business Modules : Operations and Maintenance of the ERP System - Measuring the performance of the ERP System - Business modules of an ERP package - Finance - Manufacturing - Human Resource - Plant Maintenance - Materials Management - Quality Management - Marketing, Sales ,Distribution and Services. **(12 Hrs)**

UNIT IV : The ERP Market , Tools : ERP Marketplace and market place dynamics - SAP AG - Oracle Corporation- People Soft - JD Edwards - QAD Inc. SSA Global - Lawson Software - Epicor - Intuitive **(11 Hrs)**

UNIT V : Present and Future : Enterprise Application Integration - ERP and E-Business --Future Directions and Trends in ERP - ERP Case studies. **(10 Hrs)**

TEXT BOOK

Leon, Alexis. (2006). **Enterprise Resource Planning Demystified. (**2 ed.). New Delhi: Tata McGraw-Hill Publishing Company Ltd.

REFERENCE BOOKS

1. Jaiswal Mahadeo and Vanapalli Ganesh. (2005). **Text Book of Enterprise Resource Planning**. Chennai: Macmillan India Ltd.
2. Ptak .A Carol, Schragenheim Eli. (2003). **ERP: Tools, Techniques, and Applications for Integrating the Supply Chain** (2 ed.). Boca Raton: CRC Press.

14 PBA 4341 - BIG DATA ANALYTICS

5Hours/4 Credits

COURSE OBJECTIVES

1. To introduce to the students the concept of Big Data.
2. To familiarize the applications of Big Data in various industries.
3. To impart the necessary skills for taking up job roles in big data analytics.

UNIT I : Introduction to big data analytics: Fundamentals of Big Data - Types of Big Data - Distributed Computing - Components of Big Data Technology - Cloud and Big Data. **(12 Hrs)**

UNIT II : Big Data Management & Analytics: Operational Databases – Map Reduce Fundamentals - Exploring the World of Hadoop - Hadoop foundation and ecosystem - Big Data warehouses - Big Data Analytics Text analytics and Big Data - Customized Approaches for Analysis of Big Data. **(13 Hrs)**

UNIT III : Big Data Implementation: Integrating Data Sources - Dealing with Real Time Data Streams and Complex Event Processing - Operationalizing Big Data - Governance of Big Data Environment. **(12 Hrs)**

UNIT IV : Information Management And Big Data Technology: Big Data foundation - Big data computing platforms - Big data computation - Big data storage - Emerging technologies in Big data - The cloud and Big Data - Predictive Analytics – Crowd Sourcing Analytics - Inter and Trans Firewall analytics - Big data technology terms - Data size. **(14 Hrs)**

UNIT V : Applications of Big Data Analytics: Big data - Use cases in digital decoding - consumer intent- decoding customer sentiments from comments- Big data use cases in Telecom and location based intelligence marketing-Big data use cases in Utility-banking and financial services- healthcare-Internet retail. **(14 Hrs)**

TEXT BOOKS

1. Hurwitz .J and Nugent .A. (2013). **Big Data for Dummies**. New Delhi: Wiley India. (Unit I, II and III).
2. Minelli M., Chambers M. and Dhiraj J.. (2013). **Big Data Big Analytics**. New Delhi: Wiley India. (Unit IV and V).

REFERENCE BOOKS

1. Ohlhorst F.J. (2012). **Big Data Analytics: Turning Big Data into Big Money**. New Delhi: Wiley India.
2. Liebowitz J. (2013). **Big Data and Business Analytics**. CRC Press.

14 PBA 4342 - DIGITAL ANALYTICS

5Hours/4 Credits

COURSE OBJECTIVES

1. To enable the students to know more about social media analytics.
2. To familiarize the students with the various applications of digital analytics.
3. To impart the necessary skills for carrying out job roles in the field of digital analytics.

UNIT I : Click Stream Analytics: Search analytics - Engagement quantification frameworks - Anonymous vs. registered users analysis - Search engine optimization. **(13 Hrs)**

UNIT II : Social Network Analysis: Centrality, Tie Strength, Dyads - Social Capital - Structural Roles- Online Communities - Community Detection, Diffusion in Networks. **(13 Hrs)**

UNIT III : Social Media Analytics**:** User generated content - Sentiment Analysis - Network link analysis- Text mining from opinion platforms - Theme analysis - Overlaying text mining on segments. **(13 Hrs)**

UNIT IV : Design of Experiments: Basic of DOE - Application of DOE to validate creative web design alternatives - Best practices in doing DOE for web analytics - case studies. **(13 Hrs)**

UNIT V : Applications of Digital Analytics: Promotional campaign - The concept in brief- applications in CPG - Telecom, Retail and Consumer Electronics context - Mining promotion data for targeted campaigns - print and media - Entertainment. **(13 Hrs)**

TEXT BOOK

Peterson, E. (2005). **Web Analytics Demystified: A Marketer's Guide to Understanding How Your Web Site Affects Your Business**, Celilo Group Media & Café Press.

REFERENCE BOOKS

1. Clifton. B. (2009). **Advanced Web Metrics with Google Analytics.** Wiley Publishing.
2. Ramos. A & Cota. S. (2009). **Search Engine Marketing**. McGraw Hill Publishing.

14 PBA 4344 MOBILE COMMERCE & WEB ANALYTICS

5Hours/4 Credits

COURSE OBJECTIVES

1. To make the students understand the concepts of E-Commerce and M - Commerce
2. To introduce the students, various mobile applications for business
3. To introduce the students to the concepts and techniques of web analytics.

UNIT I : Introduction to E-Commerce : E-commerce and Indian Business Context - E-Transition Business Models for E-Commerce - Marketing - Advertising - Branding - Security - Payment - Risk and Payment Systems - Designing E-Payment Systems - Digital Signature - Online financial services in India - Online Stack Trading **(12 Hrs)**

UNIT II : Introduction M - Commerce : M -Commerce Value Chain - Content Providers - Mobile portals - WASPs - Mobile Communication - Transition Toward 3G - GSM - TDMA - PDA - CDMA - Mobile Internet - Mobile IP - Mobile Security and Payment - Message Authentication Codes - Mobile Payment -Different Mobile Payment Scenario **(14 Hrs)**

UNIT III : M-Commerce Services, Next Generation : Mobile portals and Voice portals - Information services - Directory Services -Banking and Trading -Tailing and Ticketing -Entertainment -Business applications and Services - Next Generation - Personalization - Location based Services **(12 Hrs)**

UNIT IV : Web Analytics : Present and Future - Web analysis fundamentals - Web site analysis and optimization - Web server log file analysis - Page tagging - Qualitative analysis - Web analysis in business operations **(14 Hrs)**

UNIT V : On line video analysis - Web site localization - Search analytics -In depth path analysis - Click stream analytics - Analysis of referring domains -Competitive intelligence analytics - Web analytics tools **(13 Hrs)**

TEXT BOOKS

1. Norman Sadeh. (2010). **M -Commerce - Technologies**, **Services and Business model.** Johh Wiley and Sons, Inc, (Units I, II & III)

2. Kaushik Avinask. (2010). **Web Analytics 2.0** Wiley Publishing, Inc. (Units IV , V).

14 PBA 4345 - INFORMATION SECURITY MANAGEMENT

5Hours/4 Credits

COURSE OBJECTIVES

1. To provide the knowledge on Information Security.
2. To introduce the students the various security management models.
3. To understand and manage the risk relating to information security.

UNIT I : Introduction to the Management of Information Security: Security - Principles of Security Management - Project management tools- Planning for security - Planning for information implementation life cycle - Planning for contingencies. **(13 Hrs)**

UNIT II : Information Security Policy: Enterprise information security policy - Issue specific security policy - System specific security policy - Guidelines for effective policy- Developing the security program: Organizing for security - Information security roles and titles. **(13 Hrs)**

UNIT III : Security Management Models: Introduction - Bell confidentiality model - Integrity models - Access control model - Security Management models - The ISO 27000 series - NIST security models. **(13 Hrs)**

UNIT IV : Security Risk Management: Accountability for risk management - Risk identification - Risk assessment - Documenting the results of risk assessment - Risk control strategies. **(13 Hrs)**

UNIT V : Laws in Information Security: Information security and the law - Policy vs. Law - Ethics in Information security - Information systems audit and control association - Information security association - Digital forensics methodology. **(13 Hrs)**

TEXT BOOK

Whiteman. E Michael and Mattord. J Herbert. (2010). **Management of Information Security**. (4 ed.). New Delhi: Cengage Learning Publication.

REFERENCE BOOK

Tipton. F Harold (2012). **Information Security Management**. (6 ed.). CRC Press.

Sem. II
14PPH2109A **Credits: 2**

Self Paced Course:

PHYSICS OF THIN FILM AND CRYSTAL GROWTH

Objectives

- To learn the preparative techniques of thin films and crystal.
- To develop the theoretical concepts of thin films and crystal.
- To learn the characterizing techniques.

Unit-I: Preparative techniques of thin film

Physical methods-Vacuum evaporation - sputtering - chemical methods-chemical vapour deposition - Electro and electroless coating - hybrid methods-dip coating - spin coating.

Unit-II: Thickness measurement and Nucleation growth

Gravimetric - microbalance - electrical - resistance - capacitance method-optical - Fieazu fringes method- Four stages of film growth - Incorporation of defects during growth.

Unit-III: Theory of nucleation in crystal growth

Theories of nucleation - classical theory of nucleation - Gibbs Thomson equation for vapour - Modified Thomson equation for melt - Gibbs-Thomson equation for solution - Energy of formation of a nucleus - Spherical nucleus - Cylindrical nucleus - Heterogeneous nucleation.

Unit-IV: Preparative techniques of Crystal

Crystal growth from melt: Czocharlski technique-Bridgmann-stockbarger technique - Crystal growth from Solution: Low temperature solution growth - Slow cooling technique - Slow evaporation technique - High temperature solution growth - Gel growth.

Unit-V: Characterization Techniques

Structural -XRD - Micro hardness - electrical - DC and AC conduction-Four Probe technique - impedance analysis - LCR bridge measurement - optical-FTIR -functional analysis - UV-Visible - transmittance - reflectance - Absorbance.

Book for study

- Study material prepared by the department.

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Sem. I **Hours/Week: 4**
14PPH1401 **Credits: 4**

IDC-1 (WS):

PHYSICS FOR COMPETITIVE EXAMS

Objectives

- To understand the basic principles of physics
- To develop the competitive examination skills
- To Sharpen the thought process toward the objective type questions.

Unit - I:

GENERAL MECHANICS AND PROPERTIES OF MATTER

Physical quantities, SI units, Dimensions, Scalars and Vectors (Concepts), Newton's Equations of Motion, impulse, Principle of conservation of Linear momentum, Projectiles, Kepler's Laws, Newton's Law of Gravitation, acceleration due to gravity, Escape velocity, Angular momentum, banking of roads, simple harmonic motion, Viscosity, Surface Tension.

Unit - II:

HEAT AND THERMODYNAMICS

Different scales of temperatures, thermal expansions, Calorimetry - specific heat, latent heat, triple point, transmission of heat, heat conductivity, Black bodies, Stefan-Boltzmann Law, Wien's Displacement Law, Gas Equation, Boyle's Law, Charle's Law, Law of equipartition of energy.

Unit - III:

LIGHT AND SOUND

LIGHT: Reflection, Refraction and total internal reflection of light and their applications, propagation of light, Refractive index, Prism, Lenses, mirrors, Aberration in Lenses, Optical instruments - microscopes, telescopes, binoculars, Defects of Human Eye.

SOUND: Wave motion, longitudinal and Transverse waves, velocity of sound- Newton's formula, Laplace correction, effects of pressure - beats, laws of vibrating strings, open and closed organ pipes, Resonance.

Unit - IV:

ELECTRICITY AND MAGNETISM

Electric charge, field, potential, Resistances, Capacitance , Cells and their combinations, Kirchoff's laws, Ohm's law, Faraday's laws, Lenz's law, Galvanometer, Voltmeter, Ammeter, Current Electricity.

Sem. III **Hours/Week: 5**
14PPS3101 **Credits: 5**

METHODS OF SPECTROSCOPY AND LASERS

Objectives

- To learn the various spectroscopic techniques.
- To learn the applications of spectroscopy.
- To learn the concept of laser devices and its applications.

Unit I: Rotational and Vibrational spectroscopy

Basic aspects of spectroscopy-characterization of EM radiation,quantization of energy-Microwave spectroscopy-rotation of molecules and selection rules,diatomic molecules;Rigid and Non-rigid rotator-rotational constant-centrifugal distortion constant-techniques and instrumentation (FT-IR). Vibration Spectroscopy - diatomic molecules; Harmonic and anharmonic oscillators, Zero point energy - force constant - fundamental absorption and overtones (hot bands, Fermi resonance)- polyatomic molecules - Techniques and instrumentation.

Unit II: Raman and NMR Spectroscopy

Raman spectroscopy: Raman Rayleigh scattering- Quantum and Classical theory of Raman effect- Pure rotational Raman spectra - Stokes and anti-Stokes lines - Vibration Raman spectra - mutual exclusion principle- Polarized and depolarized Raman lines - Techniques and instrumentation.

NMR Spectroscopy- Hydrogen nuclei- chemical shift-spin-spin splitting-coupling constant-Instrumentation- Interaction between spin and magnetic field- Gyromagnetic ratio- FT-NMR.

Unit III: ESR and Mossbauer Spectroscopy

ESR- Principle-position of ESR absorptions-g value- hyperfine splitting-zero field splitting- ESR spectrum of free radicals and complex.

Mossbauer Spectroscopy-Principle-Doppler shift-recoil energy-isomer shift-quadrupole splitting-hyperfine splitting-Applications.

Unit IV: Electronic Spectroscopy

Electronic spectra of diatomic molecules- Born-Oppenheimer approximation - vibrational coarse structure-Frank-Condon Principle-dissociation energy and dissociation product-rotational fine structure ration transtitions-Fortrat diagram-electronic angular momentum in diatomic molecules-spectrum of molecular hydrogen-molecular photo electron spectroscopy - UV photo electron spectroscopy - X-ray photo electron spectroscopy.

Unit V: Laser devices and their applications

Principle - pumping - He-Ne laser- Carbon-di-oxide laser- semi conductor laser- Holography-recording and reconstruction- applications-laser induced fusion-fusion process-stimulated raman scattering-lasers in isotope separation - Lidar-laser tracking-lasers in industry and medicine

Books for Study

1. Colin N. Banwell and E. M. McCash, Fundamentals of Molecular Spectroscopy, TMH Edition, 4th Edition (1994).
2. Ghatak & Thyagarajan, Lasers Theory and applications, Macmillan India Ltd., (1997).

Books for Reference

1. Straughan B.P and Walker.S, Spectroscopy Vol. 1,2,3, Chapman and hall, London (1996).
2. Gurdeep R. Chatwal and Sham K. Anand, Spectroscopy, Himalaya Publishing House (2009).

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Sem. IV **Hours/Week: 4**
14UST430209 **Credits: 3**

ESTIMATION THEORY

OBJECTIVE

* To enable the students to clearly understand the concepts of Statistical Estimation .This subject deals with various statistical estimation methods of parameters and its applications in solving real life problems.

UNIT – I: POINT ESTIMATION THEORY

Parametric Estimation: Estimator - Characterisitics of an Estimator - Consistency and Unbiasedness of an Estimator-Cramer-Rao Inequality. Efficiency-Asypmtotic efficiency of an Estimator- Estimators based on Sufficient Statistics- Neyman's Factorization Theorem (without proof)- Rao-Blackwell Theorem.

UNIT – II: METHODS OF POINT ESTIMATION-1

Methods of point estimation-Method of Maximum Likelihood Estimator (MLE) - Properties of MLEs(without proof) – Problems based on MLEs.

UNIT – III: METHODS OF POINT ESTIMATION-2

Method of Moments – Problems-Method of Least Squares - Method of Minimum Chi-square-Method of Minimum variance-Minimum Variance Unbiasred Estimation (MVUE)-Problems based on MVUE.

UNIT – IV: INTERVAL ESTIMATION-1

Concept of interval estimation - Interval estimation in case of large samples - Confidence interval for proportions, means and variances based on Normal distribution.

UNIT – V: INTERVAL ESTIMATION-2

Interval estimation for small samples – Confidence intervals for means, variances, correlation coefficient and regression coefficient based on Chi-square, Student's t, and F distributions.

TEXT BOOK

1. Gupta, S.C. and Kapoor, V.K.: "Fundamentals of Mathematical Statistics", Sultan Chand & Sons,New Delhi, 11th Ed, 2002.

REFERENCE BOOKS

1. Kendall, M. and Stuart, A.: "The advanced theory of Statistics" Vol. II, Charles Griffin, 1961.

2. Rohatgi, V.K. : “Statistical Inference”, John Wiley and sons, 1984.
3. Hogg, R.V, Craig. A.T. and Tannis: “Introduction to mathematical statistics”, Prentice Hall, England, 1995.
4. Dudewicz. E.J and Mishra.S.N. : “Modern Mathematical statistics”, John Wiley and sons, 1988.

Sem. IV **Hours/Week: 5**
14UST430210 **Credits: 4**

TESTING OF HYPOTHESIS

OBJECTIVE

To enable the students to test various Statistical hypotheses.

UNIT – I: TESTING OF HYPOTHESIS-1

Simple and composite hypothesis - two kinds of errors, level of significance, size and powerof a test-desirable properties of a good test, most powerful test, Neyman-Pearson lemma with proof.

UNIT – II: TEST OF HYPOTHESIS-2

Simple examples using Neyman-Pearson lemma .Uniformly most powerful tests and unbiased tests based on normal Likelihood ratio test (without proof) and its properties. Applicaton of LR test for single mean.

UNIT – III: TEST OF SIGNIFICANCE FOR LARGE SAMPLES

Test of significance for mean(s), variance(s), proportion(s), correlation coefficient(s) based on Normal distribution.

UNIT – IV: TEST OF SIGNIFICANCE FOR SMALL SAMPLES

Test of significance for mean(s), variance(s), correlation coefficient(s), regression coefficient, based on t, Chi-square and F-distributions. Applications of Chi-square in test of significance (independence of attributes, goodness of fit).

UNIT – V:

Non-parametric tests – Kolmogorov -Smirnov test, Sign test, Wald- Wolfowitz run test, run test for randomness, median test, Wilcoxon test and Wilcoxon – Mann-Whitney test.

TEXT BOOK

1. Gupta, S.C. and Kapoor, V.K.: “Fundamentals of Mathematical Statistics”, Sultan & Chand & Sons, New Delhi, 11th Ed, 2002.

REFERENCE BOOKS

1. Kendall, M. and Stuart, A.: “The advanced theory of Statistics” Vol.II, Charles Griffin, 1961.
2. Rohatgi, V.K. : “Statistical Inference”, John Wiley and sons, 1984.
3. Hogg, R.V, Craig. A.T. and Tannis: “Introduction to mathematical statistics”, Prentice Hall, England, 1995.
4. Dudewicz. E.J and Mishra.S.N.: “Modern Mathematical statistics”, John Wiley and sons, 1988.

Sem. V **Hours/Week: 4**
14UST530302 **Credits: 4**

Core Elective-II:

STATISTICAL PACKAGES: PRACTICAL - SPSS

OBJECTIVE

To train the students in using good statistical packages for solving a variety of statistical problems.

1. Formation of discrete and continuous frequency distributions - descriptive statistics.
2. Graphs and diagrams: Pie, bar, line and scatter diagrams-Histogram and Normal probability plot
3. Correlation coefficient rank correlation, partial and multiple correlations.
4. Regression : Simple and multiple linear regression.
5. Curve estimation.
6. Compare means: Independent sample test and paired t- test.
7. Cross tabulation and Chi-square – test.
8. One way and two way ANOVA – Factorial designs.
9. Non parametric test: Binomial tests, run test, sign test, Median test, Mann-whitney test, Kruskal-Wallis, Kendall's and Friedman tests.

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Sem. VI **Hours/Week: 7**
14UST630303A **Credits: 5**

Core Elective-III: (Practical)

R-LANGUAGE

OBJECTIVE

To train the students in using good statistical packages for solving a variety of statistical problems.

1. Formation of discrete and continuous frequency distributions-descriptive statistics.
2. Graphs and diagrams: Pie, bar, line and scatter diagrams-Histogram and Normal probability plot.
3. Correlation coefficient rank correlation, partial and multiple correlations.
4. Regression: Simple and multiple linear regression.
5. Curve estimation.
6. Compare means: Independent sample test and paired t- test.
7. Cross tabulation and Chi-squre – test.
8. One way and two way ANOVA – Factorial designs.
9. Non parametric test: Binomial tests, run test, sign test, Median test, Mann-whitney test, Kruskal-Wallis, Kendall's and Fried man tests.

TEXT BOOK

1. Brian Everitt and Torsten Hothorn. "A Handbook of Statistical Analyses Using R". Chapman & Hall/CRC, Boca Raton, FL, 2006. ISBN 1-584-88539-4.

REFERENCE BOOKS

1. William N. Venables and Brian D. Ripley. "Modern Applied Statisticswith S". Fourth Edition, Springer, New York, 2002. ISBN 0-387-95457-0.
2. John Maindonald and John Braun. "Data Analysis and Graphics Using R". Cambridge University Press, Cambridge, 2003.

Sem. VI
14UST630221 **Credits: 4**

Extra Credit Course:

BIG DATA ANALYTICS

OBJECTIVES

* Students are give introduction to about Big data analytics and this paper gives overall view of how big data Generated and Analyzed.

UNIT-I:

Introduction - what is big data?– sources of big data – real time application of big data – sensitivity analysis using big data – challenges in collecting and validating big data .

UNIT-II:

Hadoop – Hadoop ecosystem for processing big data –Hadoop cluster-Hadoop distributed file system – working with files in HDFS – map reduce technique for big processing – Joining data from different sources using map reduce.

UNIT-III:

Hive and pig – need for high-level tools in big data processing – unstructured and structured data – Not Only SQL (NOSQL) commands – use of Hive as an interface to Hadoop – Use of pig as a programming Tool for big data processing.

UNIT-IV:

Statistical techniques for data analysis – Hypothesis teaching – Regression analysis – Use of toolpak in excel for statistical techniques – Use of R language for high-level big data process tasks.

UNIT-V:

Data mining through statistics – data mining for marketing, sales and customer relationship management – predictive modeling – nearest neighbour approach – survival analysis – automatic cluster deduction – market basket analysis.

BOOK FOR STUDY

1. Big data analysis for Dummies, Dummies press, 2011.
2. Hadoop Fundamentals, packet Publications, 2012.

gUtk-3 **kz; Neuk:4**
14PTA3401B **Gss;fs:4**

Tamil classical Literature – An Introduction (through English)

j;wikrhh njh;Tg ghlk - 2 (IDC)
(nkho; kwWk gzghlLg gss; khzthfSfF)

Objectives

1. Get Primary Knowledge about classism and Tamil
2. Get Knowledge about Akam Puram Literature and Twin Epics

Unit-I

The age of Tolkappiam – The Theory of Three Sangams – The works of the Third Sangam.

Unit-II

The Poems – The Long ones and the shorts ones – The Ephics – The Poets – The Grammars and the Commentraies- The colophons.

Unit-III

Aham Poems- 10, - ThePuram Poems -10, - Thirukkural 30.

Unit – IV

Social Pictures in Sangam works – Early tamil Society – Men & Woman – Family life – Personal comforts – Religion

Unit –V

The Cultural Backround – Its Characteirstics – Learning.

Books For Syllabus:

1. **Tamil a classical Language,** By S. Ratnaswami,
   SRI Velan Pathippagam, 132, s.p.Koil street, Chidambaram 608 001
2. **The classical Age of the Tamils**, M.Arokiasami M.A, Ph.D.
   Formar Professor of Indian History, University of Madras, Third Edition 2011.

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gUtk-3 **kz; Neuk:4**
14PTA3402A **Gss;fs:4**

திரைப்படக் கலை

j;wikrhh njh;Tg ghlk - 2 (IDC - BS)

Nehffk

1. j;iuffij to;Kiwfis mw;eJnfhssy
2. e;uza;ffggll t;j;fisg gadgLjj;j j;iuffijia vOJk Kiwfisf fwwy
3. `hy;Tl j;iuffij to;Kiwfis Ak› jk;o;y mjwfhd cjhuzqfisAk mw;tjd %yk› jk;o;y j;iuffij vOJjiy CfFt;jjy.

gadfs

1. jdd;rirahfj j;iuffij vOJtijr nrkikggLjjy.
2. mjd%yk jukhd gy j;iuffijfisj jk;o;y nfhzLtUjy.
3. cyfsht;a j;iuffij to;Kiwfis g;wUfF vLjJiufFk j;wd ngWjy

myF 1 **(12 kz; Neuk)**

j;iuffij t;sffk - j;iuffija;d tuyhW -- j;iuffij tbtjj;d t;sffk - j;iuffija;d %dW ghfqfs -fijiag gww;a Muharr; - j;iuffijffhfj jahu gLjJjy - rkgtqfs (Actions) fjhghj;uqfs (Characters).

myF 2 **(12 kz; Neuk)**

fjhghj;u cUthffk - Kjdikg ghj;uk - fjhghj;u t;sffk (Character Sketch) - clGw cUthffk - nts;gGw cUthffk -

fjhghjjujijg gyggLjJjy - fjhghjjujJfFj Njitahd ehdF gukhzqfs- fijAk fjhghjjuqfSk.

myF 3 **(12 kzp Neuk)**

KbTfSk njhlffqfSk -- ,uzL rkgtqfs - njhlffr rkgtk (Inciting Incident) - gujhd rkgtk (Key Incident) - fijjjUggk (Plot Points)

myF 4 **(12 kzp Neuk)**

fhlr (Scene) vdgjd tsffk - fhlrad cssllffk - fhlria vOJk tjqfs - njhluKiw (Sequence) tsffk - njhluKiwia vOJk tjqfs - jiuffijay fijia tsffr nryYk tjk

myF - 5 **(12 kzp Neuk)**

jiuffij tbtk - `hyTl jiuffij tbtk - jiuffijia vOJk tjk - ,yffaqfisj jiuffijahf khwWjy - jiuffijay clDiogG (collaboration) jiuffij vOjgglgd nraaNtzbad - tsffqfs

ghlE}y

1. uhN[ ] -]lgyl jiuffij (nkhongaugG E}y)› #uad gjggfk› nrdid.

ghuit E}y

1. R[hjh - jiuffij vOJtJ vggb
   cauik gjggfk› nrdid

E-Books

1. Screenplay - Foundations of Screenwriting
2. Four Screenplays
3. Going to the Movies
4. Screenwriter's Problem Solver
5. Story - Robert Mckee
6. Save the Cat - Blake Snyder
7. The Writer's Journey: mythical structure for writers - Christopher Vogler
8. Writing screenplays that sell - Michael Hauge
9. The anatomy of story - John Truby
10. Making a good script great - Linda Seger

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gUtk-3 **kzp Neuk:4**
14PTA3402B **Gssfs:4**

Tamil Grammar - An Introduction (Through English)

jwikrhh njhTg ghlk - 2 (IDC)
(gw gsp khzthfSfF)

Objectives

1. Learners Get Primary Knowledge about Tamil Letters
2. Get Primary Tamil Grammar Knowledge.

Unit – I

The Tamil Alphabet - Pronunciation – Vowels – Consonants - Table – Notes on from of Letters – Sanskrit Letters – stress- Doubled Consonants – Classes of Letters – Combination of Letters.

Unit –II

General Divisions Of words – Nouns – Verbs - Common objects – Not so , my, your, This persons, That woman's , Whose, Their, That, Persons, It is needed, Tome, Infinitive, It is imperatives – come , go, Bring, Take away, Name of actions, - tense – plural – Persons.

Unit –III

Medial Particles – Qualifying Adjuncts - Syntax

Unit – IV

Negative Verbal noun – Interrogatives – Numbers – Foreign words in Tamil – House hold matters – Animals, Birds, Insects, - Times, seasons, weathered – Arithmetical phrases .

Unit –V

Buying and selling – verbs Classified – English –Tamil vocabulary 100 words.

Books For Syllabus

1. An Introduction to spoken Tamil - A.C. Clayton,
   The Christian Literature Society For India – Madras – 4th Ed, 1949.
2. A First Catechism of Tamil grammar - Dr. G. U. Pope
   jkpo ,yffz E}y RUff tpdh› tpil
   T.S.S.S.Publication Association Limited, 142, TTK Road Chennai-18

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gUtk-4 **kz Neuk:6**
14PTA4116 **Gss fs:3**

Ma;T new Kiwf Sk; gad;Kiw ,yf;fz Kk;

Nehffqfs:

1. MaT new Kiwfis khz tHfSfFf fwg jjy
2. j llf flLiufs vOjg ga wWt jjy.
3. MaTf flLiu vOjg ga wWt jjy.

gadfs

1. MaT new Kiwfisf fwwy
2. j llf flLiufis MaT new Kiwfisg g dgww vOjg ga wr ngWjy>
3. fUjjuqFfSfF MaTf flLiufs vOjg ngwy.

myF - 1 **(fhyk - 18 kz)**

MaTk MaNtLk : nghUs t sffk - Mat d nghUs - Mat d Nehffk> gadfs - MaTj jlqfs - rhdW %yk> juTj njhFgG Kawr fs.

myF - 2 **(fhyk - 17 kz)**

fUJNfhs : t sffk > tiffs - MaNtlbd tbtikgG - NkwNfhs fhlLk Kiw - rhdnwz t sffk - g dd i zgGfs - fsggz m ZFKiwfs.

myF - 3 **(fhyk - 20 kz)**

vOjJg g iofis efFk to fs : g iofs njhlHfs -nrhwfisg gadgLjJk ghqF - thff ak mikfFk Kiwfs - thff a tiffs.

myF - 4 **(fhyk - 15 kz)**

gjj g h jjy - e WjjfFw aLfis ch a ,ljj y gadgLjJjy - tOffisf fisjy - jk ohlr r nrhwfisg gadgLjJjy - g hgGj jtWfisr Rlbf fhlLjy.

myF - 5 **(fhyk - 20 kz)**

jk o y tlnrhy fygG - Mqf ynkho a d jhffk - NgrR tofFk ,yff a tofFk - ty k Fk> k fh ,lqfs.

ghlE}yfs :

1. jk oz zy> ,yfFkzd> Mat ay mw Kfk> kdhlr Gjjfyhak> kJiu - 1

2. KjJ rzKfk>Ntqfluhkd> ,yff a Muharr new Kiwfs> KjJ gj ggfk> kJiu.
3. m.f . guejhkd> eyy jk o vOj Nt zLkh?>ghh e iyak> nrdid
4. kh.eddd> tofFj jk o> fof nts aL> nrdid.
5. jk oeilf ifNaL> jQirg gyfiyf fofk> ik#H nkho a ay MaT e Wtdk $lLggilgG.

ghHit E}yfs

1. rfj Nty.R.> Muharr new Kiwfs> kz thrfH gj ggfk> nrdid - 1999
2. ghyRgg uk z ad.f.Nt.> Mat ay new fs> ckh E}yf nts allfk> 156> fhkhlr akkd Nfht y njU> ruNgh[efH> kUjJtf fyY}h rhiy> jQrhTH>
3. jk oz zy>cqfs jk ioj njh eJ nfhsSqfs> kdhlr Gjjfyhak>kJiu
4. nrkg ad> f>r>j>g>k FjYk. k fhikAk> j qfs gj ggfk> ehif - 1998.

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gUtk-1 **kz Neuk:6**
14UTA130202 **Gs sfs:3**

,ffhy ,yffak

Nehffqfs

1. ,yffa tshrrg Nghffy ,ffhy ,yffaqfs Fwjj njstid khzhffh ngwrnrajy
2. ,ffhy ,yffa cjjfis mwarnrajy

gad

, jko ,yffa tshrrady ,ffhy ,yffaqfsd gqfsggid mwjy.

myF-1 ghujahh - Fayghl L (15 kz Neuk)

myF-2 ghujjhrd - mofd rhgG (15 kz Neuk)

myF-3 mgJy uFkhd - Myhgid (15 kz Neuk)

myF-4 Gjdk - nreney (15 kz Neuk)

myF-5 rWfij - NehdG (15 kz Neuk)
ciueil - vejr rykG

ghlE}yfs

1. ghujahh› Fay ghlL› rhujh gjggfk› nrdid
2. ghujjhrd› mofd rhgG› rhujh gjggfk› nrdid› 2010
3. mgJy uFkhd› Myhgid› Ne\dy ggs\h]› nrdid.
4. Nrhiy RejungUkhs› nreney› eA nrQRh Gf `T]› nrdid.
5.. nrytuh[› b. NehdG› eA nrQRh Gf `T]› nrdid.
6. khzffk› t.Rg. vejr rykG› ghit ggsNf\d]› nrdid-14

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gUtk-1 **kz Neuk:6**
14UTA130203 **Gs sfs:3**

,ilffhy ,yffak

Nehffqfs

1. ,yffa tshrrg Nghffy ,ilffhy ,yffaqfs Fwjj njstid khzhffh ngwrnrajy
2. ,ilffhy ,yffa cjjfis mwar nrajy

gadfs

1. gfj ,yffaqfsd to ,iwaay NfhlghLfis khzhffh mweJ nfhsjy
2. jko ,yffa tshrraay ,ilffhy ,yffaqfsd gqfsggid mwjy.

myF 1

jUQhd rkgejh: jUitahwWggjfk
jUtz zhkiyg gjfk (12 kz Neuk)

myF 2

khzffthrfh: jUtkkhid (Kjy 20 ghlyfs)
: rtthffak (Kjy 20 ghlyfs) (12 kz Neuk)

myF 3

Mzlhs: jUgghit (12 kz Neuk)

myF 4

ekkhothh: jUthankho (Kjy 10 ghRuqfs)
: ngha jUnkho (Kjy 10 ghRuqfs) (12 kz Neuk)

myF 5

Kjnjhs shauk: (Nrhod) (12 kz Neuk)

_____

gUtk-1 **kz; Neuk:6**
14UTA130401 **Gs s;fs:5**

fz;d;j jk;Ok ,izaggadghLk

Nehffqfs

, fz;d;a;d tuyhwiwAk nrayghlilAk khz thfs mw;arnrajy
,izajj;y jk;onkho; ngwWss nrythfiff fzlw;jy
, fz;d;jjk;o;d tshrr;e;iyfisAk r;ffyfisAk mw;arnrajy

gadfs

, fz;d;jjk;o Fw;jj mw;it khz thfs ngWth.
, mYtyfggz;> fyt;ggz;fs;y fz;d;iaf ifahSk j;wd ngWth.
, ,izajj;d tha;yhfj jk;ow;T ngWth.

myF-1 **(18 kz; Neuk)**

fz;d;: tiuaiw- ,ayGfs- fz;d; xUqF mikjjy- fz;d;a;d j;wdw; msTfs- fz;d;a;d tuyhW- tdnghUs nkdnghUs t;sffk.

myF-2 **(18 kz; Neuk)**

fz;d; ,affjnjhFgGfs- t;zNlh] mbggilfs- t;zNlh];d nghUsfs (Objects)- vkv] Mg] nrhyyhat;: mw;Kfk- vkv] NthL Mtz cUthffk

myF-3 **(18 kz; Neuk)**

jk;o vOjJUffs- xUqFw;aL (Unicode) - jk;oj jllrRKiwfs- vOjJU khww;fs- vdvrvk vOj;.

myF-4 **(18 kz; Neuk)**

,izak tuyhW- jk;o;y ,izak- NjLnghw;fs;y jk;o- jk;o ,iza jsqfs mw;Kfk

myF-5 **(18 kz; Neuk)**

k;ddQry> mulil- r%f tiyjsqfs- k;dD}yfs- k;dd;jofs- tiygG+ffs

ghlE}yfs

1. gh]fud.f.> jk;o;y fz;gnghw;a;ay fz;gnghw;a;y jk;o> ckh gj;ggfk> nrdid> 2001
2. r;tyqfk.K.> fkgA+llh ,affKiwfs> god;aggh g;ujh]> nrdid> 2001
3. MzNlh gllh.kh> jk;Ok fz;gnghw;Ak> fwgfk Gjjfhyak> nrdid> 2002
4. Jiu.kz;fzld> ,izaKk jk;Ok> eye;yk gj;ggfk> nrdid

ghhit E}yfs

1. rhejFkhh> fz;d;ffyt;> rhujh gj;ggfk> nrdid>2010
2. gh]fud.f.> fz;gnghw;j jfty njho;yElgk> ckh gj;ggfk> jQrht+h.

gUtk-3 **kz Neuk:5**
14UTA330403B **Gs s fs:5**

Allied Optional:

xggyffak - mwKfk

Nehffqfs

, xggyffak vdDk tsheJ tUk Jiwia mwKfk nrajy
, jkoyffaqfisg gwnkho ,yffaqfNshL xggLjy

gadfs

, xggyffajjd Nehffjij Ak gaidAk khz thfs mweJnfhsth.
, gwnkho ,yffaqfNshL xggljjff jkoyffaqfsd jdjjdikia czheJnfhsth.

myF-1 **(18 kz Neuk)**

xggLk xggyffak- xggyffak : tiutyffzk - xggyffajjd gzGk gaDk -xggyffajjd NjhwwKk tshrrAk -jkoy xggyffa tshrr-

myF-2 **(15 kz Neuk)**

,yffa tiffs- ,yffa tifgghlL Kiwfs- mwtay Nehffy ,yffa tif tshrr- guz ,yffa tshrr.

myF-3 **(15 kz Neuk)**

njhyfhggaKk tlnkho ,yffaf nfhsiffSk - nkagghLk urfNfhlghLk-jko fNuff tueiyf fhyg ghlyfs

myF-4 **(12 kz Neuk)**

jUfFwSk gwnkho ,yffaqfSk - jUtsStUk `raLk- jUtsStUk fdgra]_k- jUtsStUk gUjU`hAk -cyf muqfy jUfFws

myF-5 **(15 kz Neuk)**

xggay NehfF- fkgDk thykfAk -ghujAk tlkDk - ,sqNfhTk Nrf]gaUk

ghlE}y

1. ,uhrh.f xggyffak ghhjjgd gjggfk jUrruhggss 2006

ghhit E}yfs

1. ifyhrgj.f. xggay ,yffak ghhe iyak nrdid 1969.
2. rzKf nrytfzgj xggyffa tukGk nrawghLk fzgj gjggfk jQrht-h 1998.
3. jkozzy xggyffa mwKfk Nrhiy E}yfk kJiu 1979

gUtk-5 **kz; Neuk:4**
14UTA530301A **Gs s;fs:4**

fyntlbay

(Kjdikj njh;Tgghlk: jk;ohaTjJiw khz thfSfF klLk)

Nehffqfs

1. fyntlLfs tha;yhfj jk;ofjj;d goikiar rhdWld mw;eJ nfhsSjy.
2. fyntlLfs ntsggLjJk jk;ohfs;d thot;ay nraj;fis mw;eJ nfhsSjy.

gadfs

1. fyntlLfs tha;yhfj jk;of tuyhwiw khz thfs mw;eJ nfhsth.
2. fyntlLfs %yk jk;oh;d goqfhy vOjJ Kiwia mw;eJnfhsSjy.

myF 1 **(12kz; Neuk)**

KjyhtJ fyntlL Kjy MwhtJ fyntlLtiu css nraj;fs.
(jej;thkd fyntlL Kjy Kjyhk ,uhruhrd fyntlL tiu)

myF 2 **(12kz; Neuk)**

VohtJ fyntlL Kjy 11tJ fyntlLtiu css nraj;fs.
(Kjyhk ,uhruhrd Kjy Kjyhk ,uhNrej;u Nrhod fyntlL tiu)

myF 3 **(12kz; Neuk)**

12tJ fyntlL Kjy 17tJ fyntlLtiu css nraj;fs.
(Kjyhk ,uhNrej;u Nrhod Kjy tuuhNrej;ud fyntlL tiu)

myF 4 **(12kz; Neuk)**

17tJ fyntlL Kjy 23tJ fyntlLtiu css nraj;fs.
(Kjyhk FNyhjJqfd Nrhod Kjy khwQrilad fyntlL tiu)

myF 5 **(12kz; Neuk)**

24tJ fyntlL Kjy 30tJ fyntlLtiu css nraj;fs
(FyNrfuj Njth Kjy tughzbad fyntlL tiu)

ghlE}y

1. RejNur thz ilahh› it.› KggJ fyntlLffs› god;aggh g;ujh]› nrdid› 1992.

ghhit E}yfs

1. Rthk;ehjd. #› Nrfh.f;. ,UgJ fyntlLfs› ntqfluhikah gj;ggfk› j;Uggdejhs› 1991.
2. neLQnro;ad› f.› nkaffhjj;fs› kd;jk gj;ggfk› 54 ,uhruhk rhiy› fiyQh fUzhe;j; efh› j;Urr;uhggss; - 17.

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gUtk-5 **kz, Neuk:4**
14UTA530301B **Gs s,fs:4**

gaz t,ay

(Kjdikj njh,Tgghlk: jk,ohaTjJiw khz thfSfF klLk)

Nehffqfs

1. RwWyh njhlhghd gy nraj,fis Neubahf mw,eJ nfhsSjy.
2. RwWyh tha,yhfg gy kffs,d gzghlil mw,eJ nfhsSjy.

gadfs

1. RwWyht,d tshrr,iag Gh,eJ nfhsth
2. RwWyh Nkwnfhstjd %yk nghUshjhu tshrr,iag Gh,eJ nfhsth

myF 1 **(12kz, Neuk)**

RwWyht,d Njhwwk tshrr, - RwWyh Fw,jj nrhy t,sffk - mw,Qhfs,d t,sff ciu - gaz,fs,d tiffs - mbggilf $Wfs - Nehffqfs

myF 2 **(12kz, Neuk)**

RwWyh tiffs - RwWyhTk gddhlL thz,gKk - tshrr,ffhd fhuzqfs - r%f› fyhrrhu Kff,ajJtk - t,Lj,fs

myF 3 **(12kz, Neuk)**

NghfFtujJ - gazggz, e,Wtdqfs - Kfthfs,d gz,fs.

myF 4 **(12kz, Neuk)**

gaz Mtzqfs - NfLfs - ,yff,ajj,y fhzyhFk gazqfs

myF 5 **(12kz, Neuk)**

RwWyhit t,skguggLjJk rhjdqfs - nghJkffs cjj,fs

ghlE}y

1. ,uhrNrfu jqfkz,p k. RwWyht,ay Xh mw,Kfk› nfhqF gj,ggfk› ghzbah efh› r,ddhz lhd Nfha,y› f&h› 2003.

ghhitE}y

1. f,Ulbzrhk,p it. RwWyh tshrr,p kz,thrfh gj,ggfk› nrdid› 2000.

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gUtk-5 **kz, Neuk:4**
14UTA530302A **Gs s,fs:4**

NkilgNgrRf fiy

(Kjdikj njh,Tgghlk:
nkho, kwWk gzghlLg gss, khz thfSfF klLk)

Nehffk

1. Nkilg NgrRffiya,d Kff,ajJtjij khz tufs mw,ar nrajy.
2. khz tuhfs,d Ngrrhwwiy tsujjy.

gadfs

1. khz tufis vj,ufhyjj,y r,wej Ngrrhsuhfj jFj,ia tsujjy.
2. Nkilg NgrRffiya,d EZffqfis mw,ar nrajy.

myF 1 **(12 kz, Neuk)**

NgrRffiy t,sffk - NkilgNgrR tuyhW - NkilgNgrR tiffs - Ngrrhsu,d jFj,fs.

myF 2 **(12 kz, Neuk)**

nrhwngho,t,d gzGfs - r,wej Ngrr,d ,yffzk - mitarrk eqf to,Kiwfs - nkho,iaf ifahSk j,wd.

myF 3 **(12 kz, Neuk)**

Nkilj Njhwwk - NgrR eil - vOjij xy,fFk Kiw - Nkilg Ngrr,d njhlffk - Ngrr,y nghUs t,u,jjy Kis - Ngrir KbfFk Kiw - e,idthwwiyg ngUfFk to,Kiwfs.

myF 4 **(12 kz, Neuk)**

NgrrhsUfFu,a new,Kiwfs - Ngrrhsu ftdj,y nfhss Ntzbait - $llmikgghsu ftdj,y nfhss Ntzbait - NgrRj jahu,GfFu,a Fw,gGfs.

myF 5 **(12 kz, Neuk)**

ghuhlL› thojJ› ,uqfy $llqfs,y NgRkKiw - nrhwNghu› glbkdwk› toffhL kdwk› mitjjiyik› edw,Aiu Nghdwtww,y NgRk Kiwfs - mw,Qufs,d Gfongww NgrRfs - NgrRffiy ga,wr,fs.

ghlE}yfs

1. guejhkdhu› m.f,.› Ngrrhsuhf....› myy, e,iyak› nrdid - 7.
2. j,Ukiy› k.› NgrRffiy› kdhlr, Gjjf e,iyak› kJiu - 1.

ghuit E}yfs

1. Qhd rkgejd› F.› NgRk fiy› eA nrQRu, Gf `T].
2. Nly fhudf,p NkilgNgrRffiy› fzzjhrd gj,ggfk› nrdid.
3. fUzhe,j,p K.› NgRkfiy tsugNghk› ghuj, gj,ggfk› nrdid - 17.
4. Fku, Mdejd› NgrRffiy ga,wr,p thdj, gj,ggfk› nrdid -17.

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gUtk-5 **kz; Neuk:4**
14UTA530302B **Gs s;fs:4**

Clfj jk;o

(Kjdikj njh;Tgghlk: nkho; kwWk gzghlLg gss;
khz thfSfF klLk)

Nehffk

, Clfqfs;y xdwhfj j;iuggljj;d tuyhwiw mw;jy.
, cyfj j;iuggl tuyhwiw mw;eJ nfhssy.
, cyfk KOtJKss r;wej E}W j;iuggl ,afFeufis mw;jy.
, cyfk KOtJk css r;wej E}W j;iugglqfis mw;jy.

gadfs

, Clfqfs;y xdwhfj j;iuggljj;d tuyhwiw mw;tjd %yk Ezz;a j;iuggljj;idj nju;jy.
, cyfj j;iuggl tuyhwiw mw;eJ nfhstjd %yk gueJ gll mw;T ngwy.
, cyfk KOtJk css r;wej E}W j;iuggl ,af Feu fis mw;jy %yk r;wej ,afFeufshf khwy.
, cyfk KOtJk css r;wej E}W j;iugglqfis mw;jy %yk r;wej twiw nju;enjLjjy.

myF 1 **(12 kz; Neuk)**

j;iuggl tuyhW - cyfj j;iugglk - njhlff fhyj j;iugglf fzLg;bgGfs - j;iugglk njhlughd r;y fiyr nrhwfs - j;iugglk r;y Fw;gGfs.

myF 2 **(12 kz; Neuk)**

`hy;Tl j;iuggl tuyhW - g;nuQR j;iuggl tuyhW - nfhu;ah j;iuggl tuyhW - ,uhd j;iuggl tuyhW.

myF 3 **(12 kz; Neuk)**

,ej;a j;iuggl tuyhW - jk;oj j;iuggl tuyhW - ,Ugjj; VO r;wej ,ej;a ,afFeufs.

myF 4 **(12 kz; Neuk)**

j;iugglk r;y ghuitfs - cyf;d r;wej E}W glqfs - cyf;d r;wej E}W ,afFeufs - r;wej Nglbfs.

myF 5 **(12 kz; Neuk)**

Foeijfs j;iugglqfs - Mtzgglqfs - FWkglqfs - j;iuggl t;ohffs - t;UJfs - j;iuggl vj;hfhyk

ghlE}yfsghlE}yfs.

1. ,uhk f;U\ zd› v]., cyf r;d;kh› fdTg glliw› nrdid.
2. R[hjh› j;iuffij vOJtJ vggb?› ca;uik gj;ggfk› nrdid.

ghuit E}yfs

1. nro;ad› cyf r;d;kh - 1 kwWk cyf r;d;kh - 2

gUtk-6 **kz; Neuk:2**
14UTA640602A **Gss;fs:2**

gilgg;yff;ak

(j;wikrhh njh;Tgghlk -

(nkho; kwWk gzghlLg gss; khz thfSfF klLk)

Nehffqfs

1. khz thgilgGjj;wd ngWjy.
2. ,yff;a tiffs;d mikgg;id mw;jy.
3. ,yff;ag gilgGg ga;wr; ngWjy.

gadfs:

1. ntzgh› Mr;h;aggh vOJjy.
2. r;Wfij vOJjy
3. Xuqf ehlfk› GJfft;ij› i`f$ vOJjy.
4. flLiu› eifrRit› Foeijggh› r;Wth ghly vOJjy.

myF 1 **(8 kz; Neuk)**

kuGfft;ij giljjy - Mr;h;aggh›ntzgh klLk - vOjJ›mir›r_h›-jis› njhil mw;jy. - kuGfft;ij vOJjy (ahggw;eJ ghgGida E}y;y ntzgh klLk)

myF 2 **(7 kz; Neuk)**

GJfft;ij vOJjy - Kuz› mejhj; gbkk - Fw;aL - tif - tbtk - r;jj;u tbtk - FWkgh (i‘f$)› mst;awgh (y;kh;f$) - ghLnghUs - fhjy› j;Ukzk› jhaik› tujlriz› ifkik› gz;NkwnryYk ghitah› rkjJtk› fwG› ghy;ay› mur;ay› rhj;aur;ay› Coy› flTs kWgG› rkak› gujjik› thojJ› ,awif› jggoffk› fyt;a;ay› Nghh vj;hgG› tWik› ej; cjj; ciutrR - tbtk.(GJfft;ij ,yffzk E}y KOikAk)

myF 3 **(8 kz; Neuk)**

r;Wfij vOJjy - r;Wfij ,yffzk njhlffk - KbT - fijffU jeJ vOj itjjy (vOJtJ vggb E}y;y r;Wfij vdDk jiygG klLk)› fijffiy (mf;yd) E}y;y Kjy leJ jiygGfs› edNthil cjj; - elgg;ay - tUzideil - fijkhejh cUthffk

myF 4 **(7 kz; Neuk)**

eifrRit vOJjy - Foeijgghly vOJjy - Xuqf ehlfk vOJjy - (vOJtJ vggb E}y;y r;Wth ,yff;ak› eifrRit› ehlfk› ahggw;eJ ghgGida E}y;y Foeijggh)› ghQrhy; rgjk› tofFiu fhij Nghy Xuqf ehlfk vOjf fwg;jjy.

ghlE}yfs

1. kUJ}h muqfuhrd› ahggw;eJ ghgGida› lej;izg gj;ggfk› j;Utyy;fNfz; nrdid
2. mf;yd› fijffiy› r;tgg;ufhrk njU› j;.efh nrdid.
3. kfuk (njh.M) vOJtJ vggb njhFj; -5› god;aggh g;ujh]› nrdid
4. ,uhNrej;ud ,uh› GJfft;ij ,yffzk› ,jaNuh[h gj;ggfk NfhlkghffK nrdid.

ghhit E}yfs

1. ghyh› GJfft;ij xU GJgghhit› mfuk› r;tfqif.623560
2. kfuk (njh.M) vOJtJ vggb njhFj; 1 - 4› god;aggh g;ujh]› nrdid -14
3. griraggd.kh.t› jk;o ehtyfs;y edNthilf NfhlghLfs› mUt; gj;ggfk›mz zhefh›nrdid-75.
4. guejhkdhh m.f; ft;Quhf› ghu; e;iyak› nrdid-1

gUtk-6 **kzp Neuk:2**
14UTA640602B **Gs spfs:2**

ELEMENTARY TAMIL GRAMMAR

(jpwikrhh njhpTgghlk -
(nkhop kwWk gzghlLg gsspl khz thfSfF klLk)

Objectives

1. Learners Get Primary Knowledge about Tamil Letters
2. Get Primary Tamil Grammar Knowledge.

Unit-I

The Tamil Alphabet - Pronunciation – Vowels – Consonants

Unit –II

General Divisions of words – Nouns – Verbs - Common objects

Unit –III

Medial Particles – Qualifying Adjuncts - Syntax

Unit – IV

Negative Verbal noun – Interrogatives – Numbers .

Unit –V

English –Tamil vocabulary 100 words.

Books for Syllabus:

1. **A First Catechism of Tamil Grammar**
   Dr. G. U. Pope
   jkpo ,yffz E}y RUff tpdh› tpil
   T.S.S.S.Publication Association Limited
   142, TTK Road Chennai-18

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SYLLABUS

B. VOC. VISUAL COMMUNICATION TECHNOLOGY

Sem-I		L	P	C
14UVT110001	Language – I: **ஊடகத்தமிழ்**	2	0	2

நோக்கங்கள்

- தமிழ்மொழிப் பயிற்சி அறிதல்
- சிறந்த நிகழ்ச்சித் தொகுப்பாளரை உருவாக்குதல்
- வாசிப்புப் பயிற்சி முறையை அறிதல்

பயன்கள்

- தகவல் தொடர்புத்துறையில் வாய்ப்பு பெறுதல்.
- ஊடகத்துறையில் பணியாற்றும் வாய்ப்பு பெறல்.

பருவம்: 1

அலகு - 1

1. தமிழ்மொழிப் பயிற்சி : பேச்சுத் தமிழ்
2. பிழையின்றிப் பேசுதல்
3. தயக்கத்தைப் போக்குதல்

அலகு - 2

4. வாசிப்புப் பயிற்சி
5. உச்சரிப்புப் பயிற்சி

அலகு - 3

6. பேச்சுப் பயிற்சி
7. குரல் ஏற்ற இறக்கம்

அலகு - 4

8. வட்டாரவழக்குச் சொற்கள்

9. சரளமாகப் பேசுதல்.

அலகு - 5

10. அடிப்படை இலக்கண இலக்கிய அறிவு பெறுதல்
11. ஊடகமும் தமிழ்மொழியும்

பார்வைநூல்கள்

எம்.ஏ.நுஃமான்: **அடிப்படைத்தமிழ் இலக்கணம்**

சுரேஷ்பால் : ***மீடியா உலகம்***

சோ. சிவபாதசுந்தரம் : ***வானொலி***

சோ.சிவபாதசுந்தரம் : ***ஒலிபரப்புக்கலை***

செல்வம் : ***வானொலித் தமிழ்***

வெ.நல்லதம்பி : ***தொலைக்காட்சித் தமிழ்***

அ.சாந்தா&வி.மோகன் (பதிப்பாசிரியர்கள்):

Sem-I	L	P	C
14UVT110002	0	2	2

TAMIL LAB - I

செய்முறைப்பயிற்சி

வானொலிமற்றும்தொலைக்காட்சிமாதிரிநிகழ்சிகளைத்தமிழில்மாணவர்கள்உருவாக்குதல்

- கொடுக்கப்படும் தலைப்புகளுக்கு ஏற்பசரளமாகப் பேசுதல்
- நிகழ்ச்சி வரைவு தயாரித்தல் (Script Writing)
- இதழ் மாதிரி தயாரித்தல்
- குரல் பதிவு (Voice Recording)
- செய்தி வாசிப்பு (News Reading)
- ஒலி ஒளிப் பதிவுசெய்தல் (AV Recording)
- உரையாடல்
- குறும்படக்கதை எழுதுதல்
- புதியவிளம்பர உத்திகளை உருவாக்குதல்

Sem-II		L	P	C
14UVT110002	Language – I: ஊடகத்தமிழ் -II	2	0	2

பருவம்: 2

நோக்கங்கள்

ஊடகங்களைப் பற்றி அறிதல்
தமிழில் திறம் படப் பேச, எழுதப் பழகுதல்
சிறந்த தொகுப்பாளரை உருவாக்குதல்
தமிழ் மொழிக்கும் ஊடகங்களுக்குமான தொடர்பினை அறிதல்

பயன்கள்

காட்சி கேள்வி ஊடகங்களின் நுட்பங்களை அறிதல்
பல்வேறு ஊடகத் துறைகளில் பணியாற்றும் வாய்ப்பு

அலகு - 1

1. ஊடகங்கள்
2. ஊடகங்களின் வகைகள்
3. அச்சு ஊடகம்(print media)

அலகு - 2

4. இதழ்கள்
5. இதழ்களின் வகைகள்
6. இதழ்களின் பணிகளும் பயன்களும்

அலகு - 3

7. இதழ் தொடங்குவதற்கான வழிமுறைகள்
8. இணையத்தமிழ்

அலகு - 4

9. இணையத்தில் தமிழ்மொழிப் பயன்பாடு

10. சமூக ஊடகங்களில் தமிழ்

அலகு - 5

11. எழுத்துப் பயிற்சி
12. மரபுத் தொடர்கள் பயன்பாடு
13. ஒருமை பன்மை வேறுபாடு

பார்வைநூல்கள்

எம்.ஏ.நுஃமான்: **அடிப்படைத்தமிழ்இலக்கணம்**

சுரேஷ்பால் : ***மீடியாஉலகம்***

சோ.சிவபாதசுந்தரம் : ***வானொலி***

சோ.சிவபாதசுந்தரம் : ***ஒலிபரப்புக்கலை***

செல்வம் : ***வானொலித்தமிழ்***

வெ.நல்லதம்பி : ***தொலைக்காட்சித்தமிழ்***

அ.சாந்தா&வி.மோகன் (பதிப்பாசிரியர்கள்): ***மக்கள்ஊடகத்தொடர்பியல்அடிப்படைகள்***

இணையத்தில்கற்க., www.palkalaikazhakam.com www.tamilvu.org

Sem-II	L	P	C
14UVT110004	0	2	2

TAMIL LAB - II

செய்முறைப்பயிற்சி

<u>நிகழ்சிகளைத்தமிழில்மாணவர்கள்உருவாக்குதல்</u>

- **நிகழ்ச்சி வரைவு தயாரித்தல்** (Script Writing)
- **இதழ் மாதிரி தயாரித்தல்**
- **உரையாடல்**
- **இணையத்தில் தமிழ்மொழிப் பயன்பாடு**
- **குறும்படக்கதை எழுதுதல்**
- **புதியவிளம்பர உத்திகளை உருவாக்குதல்**

Sem-I	L	P	C
14UVT120101	2	0	2

Communicative English-I (Media English)

Objectives:

- To help students acquire the nuances of newspaper language and its style.
- To introduce basic Tenses to students.
- To widen the scope of students' employability in print media.

Unit-I

1. Simple present tense.
2. Simple past tense.
3. Simple future tense.
4. Present continuous tense.

Unit-II

5. News stories and their structures.
6. The task of a newspaper reporter.

Unit- III

7. English newspapers in India.
8. Advertisement in newspaper.
9. Writing headlines and the lead.

Unit – IV

10. Present perfect tense.
11. Past continuous tense.
12. Past perfect tense.
13. Future perfect tense.

Unit – V

14. Body paragraphs and slant.
15. Writing editorials and op-ed pieces.
16. Writing for magazines.

BOOK FOR STUDY

Units I and IV

1. Murphy, Raymond. Intermediate English Grammar. New Delhi: Cambridge University Press, 2007.
2. Murphy, Raymond. Essential English Grammar. New Delhi: Cambridge University Press, 2007.

Units II, III and V

1. Friedman, Anthony. Writing for Visual Media. New Delhi: Focal Press, 2007.

BOOKS FOR REFERENCES

1. Timothy Gerard. Writing for Multimedia: Education, Training, Advertising and World Wide Web, Oxford: Focal Press, 1997.
2. Agee K. Waren. Etal. Introduction to Mass Communication. New Delhi: Oxford, 1979.
3. Keval, J. Kumar. Mass Communication in India. India: Jaico.1994.
4. Roy, Barun. Beginners' Guide to Journalism and Mass Communication. Delhi: Pustak Mahal, 2010.

Sem- I	L	P	C
14UVT130201	0	4	4

Core Paper- I

AUDIO ELECTRONICS

Unit – I: Fundamentals of Electronics

Signal – types of signal- Parameters: amplitude, frequency, phase- measuring Instruments: Multimeter, CRO , dB meter - Measuring techniques : amplitude (peak to peak Voltage), RMS Voltage, frequency. Voltage and Current Stabilization, inverter, Types of Cables and Connectors.

Unit – II: - Principles of Sound and Acoustics and Auditorium

Components of sound: pitch, intensity, tones and harmonics- propagation of sound- speed of sound in air – perception of sound- human earing capability – Voice Frequency - measurement techniques of sound - Fundamental of Acoustics- acoustic sub disciplines: speech, music, architectural

Acoustics and Auditorium

Architectural plan of room- specification- analyzing acoustic level of room- hydrography(echo sounding)- echo Cancellation techniques- selection: microphones, amplifiers, speakers – positioning the speakers- Sound System Installation – Electrification : power stabilization, earthing , Cooling - Multi Amplifier System Arrangement. Safety and precautions.

Unit – III: Microphone

Basic Principle of Sound transducer – Internal and External Structure of microphone - Types of microphone–microphone polar patterns- impedance matching – Microphone Specification: frequency response, gain, noise and distortion- application specific design.

Unit – IV: Speaker

Internal Structure of speaker- Specification of Speaker: impedence, power, frequency response, gain, noise and distortion - types of speaker – Speaker box design and types – line matching transformer- losses and noises in speaker systems- Handling of Speakers — Analog Vs Digital Speakers - Digital Speakers and its Function

Unit – V: - Amplifiers

Pre amplifier, pre amplifier cum mixer -power amplifier –Specification of Amplifier- Impedance matching – power rating – output load management- simple Public Addressing system (PA)- PA System connecting Methodology - Home Theatre amplifiers

BOOKS FOR STUDY

1. John Linsley hood , Audio Electronics, Elsevier Print book Publication,1995

2. Bob Cordell, Designing Audio Power Amplifiers, McGraw Hill,2007

3.David Lapp, The Physics of Music and Musical Instruments, tufts University Publishers , 2003

4.Lawrence E Kinsler ,Fundamentals of Acoustic, Wiley & Sons Canada, 2000

BOOKS FOR REFERENCES

John Linsley hood ,Audio Electronics, Elsevier Print book Publication,1995

2. Bob Cordell, Designing Audio Power Amplifiers, McGraw Hill,2007

3.David Lapp, The Physics of Music and Musical Instruments, Tufts University Publishers , 2003

4.Lawrence E Kinsler ,Fundamentals of Acoustic, Wiley & Sons Canada, 2000

Sem- I

	L	P	C
	4	0	4

14UVT130202

Allied Paper- I
BASICS OF PHOTOGRAPHY

Unit – I: Light

Introduction to Light – definition – characteristics of light, Lighting – Sources of light – natural and artificial lighting- -types of lighting -indoor and outdoor lighting – 3 point, 5 point, 7 point lighting– Flash- light intensity measurements

Unit – II: Camera

Different Types of Camera- Digital SLR (Single lens Reflex cameras- DSLR-Compact Digital cameras-Other types of cameras(Polaroid…)-Bridge cameras-Mirror less interchangeable lens cameras. CCD, cmos – Resolution – Storing images – Optical and Digital Zoom.

Unit – III: Technicality of photography

Aperture – Focus -View point – Perspective – shutter speed – Depth of field –Composition: Subject and Content- Introduction of Framing and Backgrounds.

Unit – IV: Camera Lens

Types of Camera lenses: Standard lenses-Macro lenses-Telephoto lenses-Wide angle lenses-Specialist lenses-Kit lenses- maintenance of camera and lens. Filters- Types of filters- functions and uses of filters.

Unit – V: Generic of Photography

Language of Photography, Chemistry of Photography, Portraiture, product, landscape, photo feature, creative photography, event photography, nature Photography – Photo Journalism – Advertising Photography– wild life photography.

BOOK FOR STUDY

Hands Geoffrey - The Handbook of Digital Photography, Silver Dale Book, (2004)

BOOK FOR REFERENCES

1. Neblette C.B. - Fundamentals of Photography, Published by Van Nostnand Reinhold Company New York, (1970)
2. Zuckerman Jim- Techniques of Natural Light Photography, Published by Writer's Digest Books, China, (1996)
3. Hands Geoffrey - The Handbook of Digital Photography, Silver Dale Book, (2004)
4. Jacobs- Close Up Photography, Writers Digest Book, Ohio,(2001)
5. Thiagarajan.S (2002)- Practical Photography, Himalaya publishers, New Delhi

Sem-I	L	P	C
14UVT120102	0	2	2

ENGLISH LAB- I

LANGUAGE SKILLS OF PRINT MEDIA

Objectives:

To help students acquire the nuances of Newspaper language and its style.

To widen the scope of students' employability in print media

1. News stories and their structures.
2. Listening ideas using the passive voice.
3. The task of a Newspaper Reporter.
4. Use of Indigenous words in English Newspapers in India.
5. Writing the Headline and the Lead.
6. Body Paragraphs and Slant.
7. Writing Editorials and Op-ed pieces.
8. Writing for Magazines: Action-Angle-Anecdote

BOOKS FOR REFERENCE

1. Latha Nair, English For The Media, Delhi: Foundation Books, 2014.
2. Timothy Gerard. Writing for Multimedia: Entertainment Education, Training, Advertising and World Wide Web, Oxford: Focal press, 1997.
3. Agee K.Warren. etal. Introduction to mass communication. New Delhi: Oxford, 1979.
4. Friedmanm, Anthony. Writing for Visual Media. New Delhi: Focal press, 2007.

Semester I	L	P	C
14UVT130203	0	4	4

B. Voc Visual Communication Tech Practical's- I

AUDIO ELECTRONICS EXPERIMENTS

Practical's:

1. Instruments Demonstration.
2. Multimeter and Measurements
3. CRO and Measurements
4. Stabilizer and Inverter Studies
5. Cable making with Connectors
6. Demonstration of Sound Measuring instruments
7. Intensity Measurement.
8. dB Measurement.
9. Acoustic measurements.
10. Acoustical design Calculation of an Auditorium.
11. Audio system Arrangement I.
12. Audio system Arrangement II.
13. Study and setting up of Electrification.
14. Study on Safety Measures.
15. Trouble shooting methods.
16. Study of Sound transducers
17. Multi meter based Microphone Measurement.
18. Study of Microphone Directivity.
19. Wireless Microphone Studies.
20. Study of speaker Components
21. Multi meter based Speaker Measurement.
22. Speaker Box Design.
23. Distance and power calculation.
24. Speaker Impedance Matching.
25. Study of Digital Speakers
26. Study of Pre Amplifier
27. Study of Mixer
28. Study of Power Amplifier
29. Impedance matching
30. Arrangement and connecting of simple PA System
31. Arrangement and connecting of Simple Home theatre (Audio).

Sem- I	L	P	C
14UVT130204	0	4	4

B. Voc Visual Communication Technology Practical's- I

BASICS OF PHOTOGRAPHY

Practical's:

1. Study on intensity of light
2. Study on difference sources of light
3. Study on the working principles of flash
4. Study on 3 point, 5 point, 7 point lighting
5. Study of different camera handling techniques
6. Study of Mirror less interchangeable lens cameras.
7. Study of camera resolution
8. Study of optical and digital zoom
9. Exercise on Aperture,
10. Exercise on camera Focus
11. Exercise on View point and Perspective
12. Exercise on shutter speed
13. Exercise on Depth of field
14. Exercise on Picture Framing
15. Study of different camera lenses
16. maintenance of camera and lens
17. Urban and rural Landscapes photography
18. Flora and Portraits-photography
19. Capturing Motion through Shutter Speed Control
20. Cultural photography(demonstrating local culture)
21. Candid Portraits.
22. Low-light photography
23. Night Landscapes.

Semester I	L	P	C
14UVT130203	0	4	4

B. Voc Visual Communication Tech Practical's- I

AUDIO ELECTRONICS EXPERIMENTS

Practical's:

1. Instruments Demonstration.
2. Multimeter and Measurements
3. CRO and Measurements
4. Stabilizer and Inverter Studies
5. Cable making with Connectors
6. Demonstration of Sound Measuring instruments
7. Intensity Measurement.
8. dB Measurement.
9. Acoustic measurements.
10. Acoustical design Calculation of an Auditorium.
11. Audio system Arrangement I.
12. Audio system Arrangement II.
13. Study and setting up of Electrification.
14. Study on Safety Measures.
15. Trouble shooting methods.
16. Study of Sound transducers
17. Multi meter based Microphone Measurement.
18. Study of Microphone Directivity.
19. Wireless Microphone Studies.
20. Study of speaker Components
21. Multi meter based Speaker Measurement.
22. Speaker Box Design.
23. Distance and power calculation.
24. Speaker Impedance Matching.
25. Study of Digital Speakers
26. Study of Pre Amplifier
27. Study of Mixer
28. Study of Power Amplifier
29. Impedance matching
30. Arrangement and connecting of simple PA System
31. Arrangement and connecting of Simple Home theatre (Audio).

Sem- I	L	P	C
14UVT130204	0	4	4

B. Voc Visual Communication Technology Practical's- I

BASICS OF PHOTOGRAPHY

Practical's:

1. Study on intensity of light
2. Study on difference sources of light
3. Study on the working principles of flash
4. Study on 3 point, 5 point, 7 point lighting
5. Study of different camera handling techniques
6. Study of Mirror less interchangeable lens cameras.
7. Study of camera resolution
8. Study of optical and digital zoom
9. Exercise on Aperture,
10. Exercise on camera Focus
11. Exercise on View point and Perspective
12. Exercise on shutter speed
13. Exercise on Depth of field
14. Exercise on Picture Framing
15. Study of different camera lenses
16. maintenance of camera and lens
17. Urban and rural Landscapes photography
18. Flora and Portraits-photography
19. Capturing Motion through Shutter Speed Control
20. Cultural photography(demonstrating local culture)
21. Candid Portraits.
22. Low-light photography
23. Night Landscapes.

Sem-II	L	P	C
14UVT130202	2	0	2

Communicative English-II (Media English)

Objectives:

- To help students acquire the nuances of Radio and its uses.
- To introduce basic Tenses to students.
- To widen the scope of students' employability to work in the fields of Radio.

Unit-I

1. Present perfect continuous.
2. Past perfect continuous.
3. Future perfect continuous.

Unit- II

4. Introduction to Radio.
5. Techniques of writing for the Broadcast media.

Unit-III

6. Use of language debriefing.
7. Radio presenter and writing for Radio programmers.
8. Advertising in Radio.

Unit-IV

9. Usage of will and would.
10. Usage of shall and should.
11. Usage of may and might.

Unit-V

12. Radio Talk shows and Radio Reviews.
13. Origination of FM Radio.

BOOKS FOR STUDY

Units I and IV

1. Murphy, Raymond. Intermediate English Grammar. New Delhi: Cambridge University Press, 2007.
2. Murphy, Raymond. Essential English Grammar. New Delhi: Cambridge University Press, 2007.

Units II, III and V

1. Gilmurray, Bob. The Media Student's Guide to Radio Production. U.S: Mightier Pen Publishing, 2010.

BOOKS FOR REFERENCES

1. Latha Nair, English for The Media, Delhi: Foundation Books, 2014.
2. Stracynski J. Michall, The Complete Books Script Writing: Television, Radio, Motion Pictures, The stage.
3. David Keith Cohler, Broadcast Journalism: A Guide for Presentation of Radio and Television News.
4. Abbot and Richard Lee Rider. Handbook of Broadcasting. California, McGraw-Hill,1957.

14UVT130207 **4 0 4**

Core paper II

SOUND ENGINEERING AND PROGRAMME PRODUCTION

Unit – I: Audio Studio

Human Perception of Sound: Monophonics signals- High Fidelity Sound-Sound Reproducing Systems : mono, Stereo and Multi-Channel- Sound Field - Sound Diffusers- Sound Absorption- Sound reflection – Cabling :Audio Wiring- Patch Bays- Bi and Tri amping- HDMI - IEEE1394

Unit – II: Sound Effects and Digital Sound system

Reverberation /echo, reverse echo, flanger, phaser, chorus, equalization, filtering, pitch shift, time stretching, 2.1 surround, 5.1surround, 7.1and 7.2 surround, 3D Sound, Dolby, DTS Sound, Digital Qube

Unit – III: Recording and Mixing Console

Isolation Booth- Reference Monitor- Multi track recording: Voice signal, Musical signal- structure of Mixing console : channel input, master output control, audio level metering – Digital vs Analog mixer- application.

Unit – IV: Audio Software

Mono and Stereo Channels – Bit depth – Sample rate – Audio recording , editing and Mixing – Audio Special effects – Audio File Formats – Monitoring Sound Signal- controls: Faders, Sliders- Editing procedures in software.

Unit – V: Programme Production for FM Radio

Introduction to Radio Medium –Social Life and radio–Types : A.M ,F.M., Community radio , FM console - Program Production – Recorded programmes – Recorded voice and music – sound effects – Live/on-air productions – Duties of on – air producer – Cue sheets and Log books.

BOOKS FOR STUDY:

1.Hausman, carl and Benoit Philip ,Messere Fritz (2005) Modern Radio Production , New York : Rout ledge.

2.Hausman ,Carl (2007) : Modern Radio Production: Production Programming, California : Brooks.

BOOKS FOR REFERENCE :

1. Housman, Carl (2004) Modern Radio Production. Canada : Wadsworth publication.

2. Mc Leish, James , (1999) Radio production. Burlington : Focal Press

3. Baruah U. L (1983) All India Radio. New Delhi : Government of India publications

4. Ric Viers 2008 The Sound Effects Bible: How to Create and Record Hollywood Style Sound Effects

Sem-II	L	P	C
14UVT230206	0	9	9

SKILL COMPONENT

IMAGE EDITING AND MANIPULATION

Assurance Of Learning:

- Ability to understand the need for Image Manipulation
- Ability to analyze the Tools of Photoshop
- Knowledge about Image Special Effects
- Ability to understand Masking and Filters in Photoshop
- Acquire knowledge on the Album Designing and Various Designing concepts

Unit – I: Tools of Photoshop:

Introduction of photo shop-Exploring the Menu Bar- Toolbox- Options Bar-usage of Marquee Tools-Exploring the Lasso Tools-Creating Selections Using the Magic Wand- Using Color Range to Create Selections-Creating Selections Using Extractions-Transforming a Selection-Copying Pasting and Moving a Selection

Unit – II: Layer image formation:

Layers - different layer types-Creating multiple layers-Working with Layers-Applying Layer Styles- Fill and Adjustment Layers: palette-naming-creating-deleting-viewing-moving-Exploring Layer Components- Masks- Using Layer Masks-Merging and Flattening Layers

Unit – III: Image editing and special effects:

Cropping images and manipulation -Using various stencils and template designs -Working with textures and importing -Correcting your photos to remove red eyes, blemishes, ageing etc- blur and sharpen - creation of various collages -Working with text and custom fonts -Creating vector

Unit – IV: Masking and Designing

Induction- Summary- Instruction-Reformation of images-Creating graphics and simulations-Design and painting in Photoshop-Processing computer graphic integration.-Making special effects: collages, editing of warm and cool, colours - Designing of advertisements, posters,

Sem-II	L	P	C
14UVT130208	0	9	9

SKILL COMPONENT

IMAGE EDITING AND MANIPULATION

Assurance Of Learning:

- Ability to understand the need for Image Manipulation
- Ability to analyze the Tools of Photoshop
- Knowledge about Image Special Effects
- Ability to understand Masking and Filters in Photoshop
- Acquire knowledge on the Album Designing and Various Designing concepts

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Introduction of photo shop-Exploring the Menu Bar- Toolbox- Options Bar-usage of Marquee Tools-Exploring the Lasso Tools-Creating Selections Using the Magic Wand- Using Color Range to Create Selections-Creating Selections Using Extractions-Transforming a Selection-Copying Pasting and Moving a Selection

Unit – II: Layer image formation:

Layers - different layer types-Creating multiple layers-Working with Layers-Applying Layer Styles- Fill and Adjustment Layers: palette-naming-creating-deleting-viewing-moving-Exploring Layer Components- Masks- Using Layer Masks-Merging and Flattening Layers

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Cropping images and manipulation -Using various stencils and template designs -Working with textures and importing -Correcting your photos to remove red eyes, blemishes, ageing etc- blur and sharpen - creation of various collages -Working with text and custom fonts -Creating vector

Unit – IV: Masking and Designing

Induction- Summary- Instruction-Reformation of images-Creating graphics and simulations-Design and painting in Photoshop-Processing computer graphic integration.-Making special effects: collages, editing of warm and cool, colours - Designing of advertisements, posters,

business cards -Greeting card-Brochure designing- wedding card designing-Book layout-magazine layout-Newspaper layout-calendars designing-Building a booklet

Unit – V: Photo Essay (Album Making):

The theoretical study of the world of digital album design - Reformation of images-Design and paint in photo shop - Creating a Photo Panorama- Creating a photo Slide Show-Creating a Photo Calendar-Creating special effects on collages- Photo Feature- Digital Album.

BOOK FOR STUDY

1. Gregory Georges,Photoshop Ver(8) CS Professional Tricks and Techniques, Unique Color Carton Offset Printers, New Delhi-4,2002

BOOKS FOR REFERENCE

1. Alan and Isabella Livingston, Graphic Design and Designers New Edition, Thames & Hudson world of art, Singapore, 2003.
2. Bride M. Whelan, Color Harmony 2, Guide to Creative Color Combinations, U.S.A , Rock fort Publishers,1994.
3. David E. Carter, The Little Book Of Logo Recipes, successful designs and how to create them, Harper Collin Publishers, Newyork, 2004.
4. Stephen House ,Photoshop CS, LP Editorial Board, Lawpt, Blue Line Printing Industries, Kolkata, 2004.

Sem- II	L	P	C
14UVT130209	0	4	4

B. Voc Visual Communication Technology Practical's- II

SOUND ENGINEERING AND PROGRAMME PRODUCTION

1. sound localization of human hearing
2. Loudness and Dynamic Range measurement (Open Space, Closed Space, Studios)
3. Fidelity measurement of two loud speaker
4. Cabling and Study of Bi-Tri Amping
5. Cabling and Study of HDMI/ IEEE1394
6. Realization of reverberation /echo effect- cancellation
7. Creation of flangers and phaser
8. Demonstration of Equalization and filtering
9. Implementation of time stretching and Pitch shift
10. Study of 2.1, 5.1, 7.1 and 7.2 surround system
11. Study of 3D Sound, Dolby, DTS Sound, Digital Qube at Cinema Theatres
12. Record voice and musical signal simultaneously
13. Monitor the audio levels
14. Record voice and musical signal separately
15. Mixing the voice and musical signal
16. Investigate about analog and digital mixer
17. Import media file into software
18. Study of bit depth and sample rate of media file
19. Adding special effects
20. Change the file formats
21. Implement fading and sliding effect using editing procedure
22. Making of audio album
23. Study of amplitude modulation
24. Study of frequency modulation
25. Demonstrate the FM console
26. Performing live /on-air production
27. Preparation of cue sheets and log books

Sem-II	L	P	C
14UVT120104	0	2	2

ENGLISH LAB- II

TECHNIQUES OF WRITING FOR RADIO

To enhance the efficiency and creativity of students in presenting all types of Radio
To maximize the employability of students to work in the fields of Radio.

1. Techniques of writing for the Broadcast media.
2. Key Elements in Radio Jockeying.
3. Tenses and Topic Sentence.
4. Use of Language Debriefing.
6. Radio Presenter and writing for Radio Programmers.
7. Interviews and Radio News.
8. Radio Talk show and Radio Reviews.

BOOKS FOR REFERNCE

1. Latha Nair, English for The Media, Delhi: Foundation Books, 2014.
2. J. Michall Stracynski, The Complete Books Script Writing: Television, Radio, Motion pictures, the stage
3. David Keith Cohler , Broadcast journalism: A Guide for the presentation of Radio and Television News,
4. Gilmurray, Bob. The Media Student's Guide to Radio Production. U.S: Mightier Pen Publishing, 2010.

Sem- II	L	P	C

Sem- II	L	P	C
14UVT130209	0	4	4

B. Voc Visual Communication Technology Practical's- II

SOUND ENGINEERING AND PROGRAMME PRODUCTION

1. sound localization of human hearing
2. Loudness and Dynamic Range measurement (Open Space, Closed Space, Studios)
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22. Making of audio album
23. Study of amplitude modulation
24. Study of frequency modulation
25. Demonstrate the FM console
26. Performing live /on-air production
27. Preparation of cue sheets and log books

Sem- II	L	P	C
14UVT130210	0	4	4

B. Voc Visual Communication Technology Practical's- II

IMAGE EDITING AND MANIPULATION

1. Cropping and slicing the image
2. Normal paint drawing
3. Image color changes
4. Image rotation
5. Colour adjustments in background
6. Formation of layer in given image
7. Adding channels in given image
8. Cropping and slicing the given image
9. Blur - sharper settings in image
10. Photo editing
11. creation of various collages
12. Designing the Masking
13. Designing 2D photos
14. Designing of posters
15. Designing Business cards
16. Designing Greeting card
17. Brochure designing
18. Designing wedding card
19. Designing Book layout
20. Magazine layout
21. Newspaper layout
22. Designing calendars
23. Building a booklet
24. Creating various sample albums
25. Developing a photo story/Essay

Sem- I	L	P	C
14UVT130211	0	4	4

WORK SHOP

AUDIO PROGRAM

1. sound localization of human hearing
2. Loudness and Dynamic Range measurement (Open Space, Closed Space, Studios)
3. Fidelity measurement of two loud speaker
4. Cabling and Study of Bi-Tri Amping
5. Cabling and Study of HDMI/ IEEE1394
6. Realization of reverberation /echo effect- cancellation
7. Creation of flangers and phaser
8. Demonstration of Equalization and filtering
9. Implementation of time stretching and Pitch shift
10. Study of 2.1, 5.1, 7.1 and 7.2 surround system
11. Study of 3D Sound, Dolby, DTS Sound, Digital Qube at Cinema Theatres
12. Record voice and musical signal simultaneously
13. Monitor the audio levels
14. Record voice and musical signal separately
15. Mixing the voice and musical signal
16. Investigate about analog and digital mixer
17. Import media file into software
18. Study of bit depth and sample rate of media file
19. Adding special effects
20. Change the file formats
21. Implement fading and sliding effect using editing procedure
22. Making of audio album
23. Study of amplitude modulation
24. Study of frequency modulation
25. Demonstrate the FM console
26. Performing live /on-air production
27. Preparation of cue sheets and log books

Sem- I		L	P	C
14UVT130212	WORK SHOP	0	4	4

IMAGE CREATION

1. Cropping and slicing the image
2. Normal paint drawing
3. Image color changes
4. Image rotation
5. Colour adjustments in background
6. Formation of layer in given image
7. Adding channels in given image
8. Cropping and slicing the given image
9. Blur - sharper settings in image
10. Photo editing
11. creation of various collages
12. Designing the Masking
13. Designing 2D photos
14. Designing of posters
15. Designing Business cards
16. Designing Greeting card
17. Brochure designing
18. Designing wedding card
19. Designing Book layout
20. Magazine layout
21. Newspaper layout
22. Designing calendars
23. Building a booklet
24. Creating various sample albums
25. Developing a photo story/Essay

Sem. I **Hours/Week : 2**
14UGE120101 **Credit : 2**

ENGLISH – I: REMEDIAL GRAMMAR AND VOCABULARY

Objectives:
*To train students to speak and write fluency and correctly.
*To increase students vocabulary to be ready for global communication.

Unit –I
1. Subject-verb agreement
2. Tenses
3. Active voice and passive voice (10)

Unit-II
4. Do Forms
5. Use of negatives
6. Prepositions (10)

Unit-III
7. Vocabulary I and II
8. Word stress and rhythm
9. Weak forms and strong forms (10)

Unit-IV
10. Listening Test
11. Reading Test (10)

Unit –V
12. Test of Accuracy
13. Test of Fluency (10)

Textbooks
Units I to V:
1. Dutt, Kiranmai, P., "Basic communication skills", New Delhi:Foundation Books, 2013.
2. Sasikumar,V., Dutt, Kiramai,P., Rajeevan Geetha, Oral Communication skills, New Delhi: Cambridge University Press,2012.

Sem. I **Hours/Week : 4**
Credit : 3

C PROGRAMMING

Objectives:

To learn the problem solving techniques along with features of 'C' language and to develop programming skills.

Unit – I:

Features of C language : Data Types - Variables - Operators - Control structures - Looping structures – Simple structure.
(15)

Unit – II:

Arrays -Functions – Built-in-functions – User defined functions - Scope of Variables Passing Arrays to function.
(15)

Unit – III:

String : Declaring and Initializing String Variable- Reading Strings from Terminal – Reading a line of Text – Writing strings to Screen – Putting strings together – Comparison of two strings – String handling functions - Structure – Union.
(15)

Unit – IV:

Pointers - Pointer to Array - Pointer Array - Pointer Arithmetic - Pointer of Pointer - Functions and Pointers – Call by value and call by reference - Structures and Pointers
(15)

Unit – V:

Files: Text file - Sequential File – Random Access file - Command Line Arguments.
(15)

BOOK(S) FOR STUDY:

1. E. Balagurusamy, "Programming in ANSI C", Tata McGraw Hill, New Delhi, Fifth Edition, 2008.

BOOK(S) FOR REFERENCE:

1. Byron S. Gottfried, "Programming with C", Schaum's Outline Series, Tata McGraw Hill Edition, New Delhi, 1991.
2. Brian W. Kernighan, Dennis M. Ritchie, "The C Programming Language", Prentice Hall of India Pvt. ltd., New Delhi, 1989.
3. E. Karthikeyan, "A Textbook on C Fundamentals, Data Structures and Problem Solving", Prentice-Hall of India Private Limited, New Delhi- 110001, 2008.

Sem. I **Hours/Week : 4**
Credit : 3

FOUNDATIONS OF COMPUTER SCIENCE

Objectives:-

- To give sound basics of organization of digital computer, system software, networking algorithm development, system analysis and design.

Unit – I:

Organization of computer: Computer Generation – Features - CPU – Types of Computers – memory – Input and output devices: Input devices –output devices – storage devices: Magnetic disk – Magnetic tape – optical technology – CD ROM technology. (15)

Unit – II:

System Software- Prewritten Software: application packages – system software packages – computer protocol and Buffers – Network topology– LAN, MAN, WAN- Basic elements of Networking – Network connecting processing techniques – Functions of OS: Compiler – assembler and Interpreter – Loader and Linker – Introduction to MSDOS, Unix and Windows. (15)

Unit – III:

Network: Data communication: Forms of communication- Types of channel – Methods of transmission – devices – Internet. (15)

Unit – IV:

Flow charts: convention – Advantages and Limitations – Types of Logic Illustration – examples – Algorithms – Examples. (15)

Unit – V:

E-mail: Sending – Reading – Replaying – Deleting – Existing –Sending mail to more than one person – Sending folder – Forwarding a mail– Checking the spelling – Attaching signature – Filling the messages –Managing the address book. (15)

BOOK(S) FOR STUDY

S. Jaiswal, " IT Today", Galgotia publication private ltd., New Delhi, 2004.

BOOK(S) FOR REFERENCE

Suresh K Basendra, " Computers Today", Galgotia publication private ltd.,New Delhi, 2001.

B.VOC-2016

Sem. I **Hours/Week : 2**

B.VOC-2016

Sem. II **Hours/Week : 2**
14UGE220103 **Credit : 2**

FUNCTIONAL ENGLISH - II
BASIC COMMUNICATION SKILLS

Objectives:
*To gain proficiency in communication..
*To improve language with respect to communication.

Unit-I

1. Talking about yourself
2. Social English
3. Getting about (10)

Unit-II

4. Shopping
5. Going to the doctor's
6. At school (10)

Unit-III

7. Finding Work
8. At the Bank and Post office (10)

Unit –IV

9. Using the Telephone
10. Emergencies (10)

Unit- V

11. Understanding Regional Speech
12. Metaphor in Spoken English (10)

Text Book:
1. Massey Dorothy, Better English, 3rd ed, VIVA Books.

Sem. II **Hours/Week : 4**
Credit : 3

USER INTERFACE DESIGN

Objective:

To master web designing in better way by learning HTML tags including standard tags, formatting tags, frame tags in order to create static/ dynamic web pages and CSS3to make the pages more attractive.

Unit I

INTRODUCING HTML5: A Basic HTML5 Template -doctype- HTML Element- Head Element - Defining Page's Structure- Header Element – Section Element - Article Element - Nav Tag Element - Aside Element - Footer Element.

(15)

Unit II

HTML5 SEMANTICS: A New Perspective on Types of Content- The Document Online- New Elements in HTML5 - HTML5 Canvas. **HTML5 TABLES**: Table attributes and Elements. **(15)**

Unit III

HTML5 FORMS: HTML5 Attributes- HTML5 Form Input Types- New Form Controls in HTML5 - Changes to Existing Form Controls and Attributes. **HTML5 AUDIO AND VIDEO**: Video Container Formats - Video Codecs - Audio Codecs - The Markup Attributes - Creating Custom Controls. **(15)**

Unit IV

INTRODUCING CSS3: CSS3 Selectors - CSS3 Colors- Drop Shadows – Text Shadow **CSS3 GRADIENTS**: Linear Gradients-Radial Gradients - Repeating Gradients. **(15)**

Unit V

CSS TRANSFORMS AND TRANSITIONS: Transforms - Transitions - Animations - Embedded Fonts -CSS3 Multicolumn Layouts - SVG and Drag and Drop. **(15)**

Book for Study

Alexis Goldstein, Louis Lazaris, Estelle Weyl, "HTML5 & CSS3 for the Real World", SitePoint Pvt. Ltd., 2011.

Book for Reference

Terry Felke-Morris, "Basics of Web Design: HTML5 & CSS3", Pearson Higher Ed Addison-Wesley representative, 3rd Edition, 2015.

Sem. II **Hours/Week : 4**
Credit : 3

Graphics Design

Objective : To impart the knowledge of various designs like pattern, Greeting cards, Visiting card, Web banner using Photoshop

UNIT – I:
Introduction & Interface – What is Image? Pixel - Pixel – Resolution – Image Resolution – Printing Resolution – Monitor Resolution – Color Modes (RGB – CMYK – Lab Color – Gray Scale – Bitmap – Duotone – Indexed Color and Multi channel). Zoom In – Zoom Out – Planning – Fit to Screen – Actual Size – Rulers – Guides – Grid.
(15)

UNIT – II:
Tools Box – Selection Tools - Painting Tools – Healing – Brush Tool and Patch Tool – Brush Tool and Pencil Tool – Eraser Tool – Background Eraser Tool and Magic Eraser Tool – Dodge – Burn and Sponge.

(15)

UNIT – III:
Transforming the Images – Scale – Rotate – Skew – Distort – Perspective – Flip and Canvas – Rotate Canvas – Lassos – Polygonal – Tools and Options – Magic Wand and Options.
(15)

Unit - IV:
Automatic Image Correction – Levels – Curves – Color Balance – Hue/Saturation – Selective Color – Channel Mixer – Brightness/Contrast –Invert – Gradient Color – Shadow / High Light – Histogram – Variations – Photo Filter.
(15)

UNIT – V:
Filters : Artistic filters – Brush stroke filters – Distort filters – Pixilate filters – Render filters – Sketch filters – Stylish filters – Texture filters. Combining Images : combining Files – Working with animations. (15)

Books for Study:

1. Lisa Da Nae Daley, “Adobe Photoshop CS6 BIBLE”, John Wiley & sons.
2. Jennifer Smith, “Adobe Photoshop Digital Classroom”, Wiley publications.

B.VOC-2016

Sem. II **Hours/Week : 2**
Credit : 2

ENVIRONMENTAL STUDIES

Objective :

To understand the natural resources, ecosystems, biodiversity and its Conservation, Environmental Pollution, Social Issues and the Environment and Human Population and the Environment

Unit 1: The multidisciplinary nature of environmental studies

Definition, scope and importance – need for public awareness (10)

Unit 2: Natural resources – renewable & non-renewable

Natural resources and associated problems – a) Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people – b) Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams, benefits and problems – c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies – d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies – e) Energy resources: Growing energy needs, renewable and non-renewable energy resources, use of alternative energy sources, case studies – f) Land resources: Land as a resource, land degradation, man-induced landslides, soil erosion and desertification – role of an individual in conservation of natural resources – equitable use of resources for sustainable lifestyles (10)

Unit 3: Ecosystems

Concept of an ecosystem – structure and function of an ecosystem producers, consumers and decomposers – energy flow in the ecosystem Ecological succession – food chain, food webs and ecological pyramids introduction, types, characteristic features, structure and function of the following ecosystems: a) Forest ecosystem b) Grassland ecosystem c) Desert ecosystem d) Aquatic ecosystem (ponds, streams, lakes, rivers, oceans, estuaries)
(10)

Unit 4: Biodiversity and its Conservation

Introduction – definition: genetic, species and ecosystem diversity Bio geographical classification of India – value of biodiversity: consumptive use, productive use, social, aesthetic and option values – Biodiversity at global, national and local levels – India as a mega-diversity nation – hot spots of biodiversity – threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts – Endangered and endemic species of India conservation of biodiversity:

In situ and ex situ conservation of biodiversity

(10)

Unit 5: Environmental Pollution

Definition – causes, effects and control measures of a) air pollution b) water pollution c) soil pollution d) marine pollution e) Noise pollution f) thermal pollution g) nuclear hazards – solid waste management: causes, effects and control measures of urban and industrial wastes – role of an individual in prevention of pollution – pollution case studies – disaster management: floods, earthquakes, cyclone and landslides.

(10)

Unit 6: Social Issues and the Environment

From Unsustainable to sustainable development – urban problems related to energy – water conservation, rain water harvesting, watershed management _resettlement and rehabilitation of people; its problems and concerns _case studies – environmental ethics: Issues and possible solution _climate changes, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust – case studies – wasteland reclamation consumerism and waste products – environment protection act – air prevention and control of pollution act – forest conservation act – Issues involved in enforcement of environmental legislation – public awareness.

(10)

Unit 7: Human Population and the Environment

Population growth, variation among nations – population explosion Family welfare programme – Environment and human health – human rights _value education – HIV/AIDS – women and child welfare – role of information technology in environment and human health – case studies.

(10)

Book for Study:

Environmental Studies, Department of Foundation Course, St.Joseph's College, Trichy.

B.VOC-2016

Sem. III **Hours/Week : 2**
Credit : 2

ENGLISH-III : EFFECTIVE COMMUNICATION SKILLS

Objectives:
* To Learn English through Exercises.
* Spotting out errors, while learning.

Unit-I

1. Units 1-10 (10)

Unit –II

2. Units 11-20 (10)

Unit-III

3. Units 21-30 (10)

Unit – IV

4. Units 31-40 (10)

Units – V

5. Units 41-50 (10)

Text Book:

1. Murphy Raymond, "Essential English Grammar", 2nd edition, Cambridge University Press.

B.VOC-2016

Sem. III **Hours/Week : 4**
Credit : 3

JAVA PROGRAMMING

Objective:

To understand the fundamental concepts of the object oriented technology and the power of Java language.

Unit – I:
INTRODUCTION TO JAVA: Primaries – Control Statements. **CLASSES AND OBJECTS**: General form of a class – Creation of Objects –Usage of Constructors – 'this' keyword- Constructor overloading- Copy constructors- Static Data Members – Static Methods- 'finalize()' Method.
(15)

Unit – II:
INHERITANCE AND POLYMORPHISM: Inheriting Variables in a Class – Inheriting Methods in a Class – Inheritance and Constructors – Abstract Classes – Final Classes. **INTERFACES AND PACKAGES:** Interfaces- Structure of an Interface – Implementation of an Interface – Interface Inheritance. Packages – Placing the Classes in a Package – Package Hierarchy – Access Control Modifiers.
(15)

Unit – III:
APPLETS: The Life Cycle of an Applet – The Applet Class – Development and Execution of a Simple Applet – Syntax of Applet Tag – Methods in the Graphics Class. **ABSTRACT WINDOWING TOOLKIT:** Events – Listeners – Event Handling Methods – Inheritance Hierarchy of Control Classes - Windows and Frames – Menus – Dialogs – Mouse Events and their Listeners.
(15)

Unit – IV:
EXCEPTION HANDLING: Default Exception Handling – Exception and Error Classes – Catch Block Searching Pattern – 'Throw' Statement – 'Throws' Statement – Custom Exceptions. **THREADS:** Life Cycle of a Thread – Creating and Running Threads – Methods in the Thread Class – Setting the priority of a thread – Synchronization – Dead Lock – Inter Thread Communication – Applets Involving Threads.

(15)

Unit – V:
I/O STREAMS: Input Stream and Output Stream classes – Reader and Writer classes – Data Output Stream and Data Input Stream Classes. **NETWORKING:** TCP Server Socket Class – TCP Socket Class - UDP Datagram Socket and Datagram Packet Classes. **DATABASE CONNECTIVITY**: JDBC-ODBC Connection.
(15)

BOOK FOR STUDY:
1. C.MUTHU, "Programming with JAVA", Vijay Nicole Imprints, Chennai, 2004.

BOOK(S) FOR REFERENCE:
1. Herbert Scheldt, "The Complete Reference Java 2.0", Tata McGraw Hill, New Delhi, 2002.
2. Andrew S. Tanenbaum, "Modern Operating Systems", Prentice Hall, New Delhi, 1997

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Sem. III **Hours/Week : 4**
Credit : 3

SYSTEMS CONCEPTS- I

Objectives:

- To provide a fundamental knowledge on data structures and development of algorithms
- To impart the basic knowledge about the operating systems and its management

Unit I
Stacks and queues: fundamentals- evaluation of expressions- Linked Lists: Singly Linked Lists-Linked stacks and queues- Trees: Basic terminology-Binary trees.
(15)

Unit II
Complete Development of an algorithm : - Statement – model development – Design of an algorithm – Correctness – Implementation – Analysis and complexity -Testing – Documentation.
(15)

Unit III:
Design methods of an Algorithm: Sub goals-Hill Climbing-Working Backward-Heuristic-Back Track – Recursion.
(15)

UNIT IV
Operating system Overview –Basic concepts and terminologies operating system resource manager – process view point – Hierarchical and extended machine view -Processor management – Process State Model - job scheduling- Process scheduling – Multiprocessor systems – Process synchronization – resolving deadlocks.
(15)

UNIT V
Device management – Techniques –device characteristics – I/O traffic controller – I/O scheduler and device handlers - virtual devices – spooling.
(15)

BOOK(S) FOR STUDY
1. Ellis Horowitz, Sartaj Sahni, "Fundamentals of Data structure", Galgotia Publications, New Delhi, 1985 - Units I
2. S.E. Goodman, S.T. Hedetniemi, "Introduction to the Design and analysis of algorithms", McGrawHill, International edition,1988 - Unit II, III
S.E Madnick and J J Donovan "Operating Systems" McGraw Hill International Book Co, New Delhi , 1987. Unit IV, V.

BOOK(S) FOR REFERENCE
1. Tanenbaum A.M., Augustein M.J., "Data structures with Pascal", Prentice Hall of India Ltd, New Delhi, 1985.
2. Ellis Horowitz, Sartaj Sahni, "Fundamentals of computer algorithms", Galgotia Publications, New Delhi, 1985.
3. Andrew S. Tanenbaum, "Modern Operating Systems", Prentice Hall, New Delhi, 1997.

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Sem. IV **Hours/Week : 2**
Credit : 2

ENGLISH –IV: ENGLISH LANGUAGE AND ITS USAGE

Objectives:
- Giving importance to usage of the language.
- Focusing on Structure of the language

Unit I:
1. Conjunctions
2. Word order and sentence organization (10)

Unit II:
3. Constructing Text
4. Special kinds of Language (10)

Unit III:
5. Topic Areas
6. Spelling and Punctuation
7. Word-Building (10)

Unit IV
8. Spoken Grammar (10)

Unit V
9. Various Structures (10)

Text Book:
1. Swan Michael, Practical English Usage, Oxford University Press.

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Sem. IV **Hours/Week : 4**
Credit : 3

ADVANCED JAVA

Objective:

To understand the concept of the server side - technology and to gain the knowledge about utility package
& language features.

Unit I : Servlets: Introduction – Servlelts –A simple servlet -Constituents of Javax .Servlet Pacakge - Retrieving the values of Parameters- Procedure for Execution- Retrieving the values of Initialization parameters- The javax.servlet.http package- Constituents of Javax .Servlet.Http Pacakge - Cookies – Creating a Cookie and sending it to the client – Retrieving the stored Cookies- Session Tracking.
(15)

Unit II: Java.Util Package: Introduction- The collectioninterface- The Set Interface- The ArrayList Class- The Linked List Class – The Hashset Class- The Map Interface- The HashMap Class- The Collection Algorithms- The Enumeration Interface- The Vector Class- The Stack Class- The Dictionary and Hashable Class- The PropertiesClass- The Date Class- The GregorianCalendar Class-The StringTokenizer Class- The Random Class.
(15)

Unit III: Java Sever Pages : Introduction :Request –Response Cycle in JSP – Scriptlets – Expressions – Declarations- Directives- Implicit Objects- <jsp.include> standard Action - <jsp.forward> standard Action-<jsp.param> standard Action- <jsp.plugin> standard Action.
(15)

Unit IV: Enterprise Java Beans : Introduction – EJB Container – EJB as a Component - EJB as a Framework - EJB Types – Session Bean – Message Driven Beans.
(15)

Unit V: Java.Lang Package: Introduction – Type Wrappers – The Number Class – The Process Class – The Runtime Class – The System Class – The Object Class – The Class class – The Math Class – The String Class – StringBuffer Class.
(15)

BOOK FOR STUDY:

Unit I &II : C.MUTHU, “Programming with JAVA”, Vijay Nicole Imprints, Chennai, 2004.
Unit III – V : C.MUTHU, “Advanced JAVA”, Shalom Infotech Private Limited, , 2015.

BOOK(S) FOR REFERENCE:

1. Herbert Scheldt, “The Complete Reference Java 2.0”, Tata McGraw Hill, New Delhi, 2002.

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Sem. IV **Hours/Week : 4**
Credit : 3

SYSTEM CONCEPTS - II

Objectives:

To understand the principles of Linux Operating System for effective System administration.

Unit – I:

Linux Introduction and Installation: Linux-Advantages-Red Hat Linux- New Features-Installation procedures and Methods. Using Desktop-GNOME-KDE-Linux Commands Accessing and Running Applications-Installing Red Hat Linux Applications, Running Window Application, Running Windows, DOS and Macintosh Applications – Tools for using Internet and Web.
(15)

Unit – II:

Administration: Understanding System Administration: Root login super user-GUI tools, commands and Log files-Configuring Hardware-File System and Disk Management-Monitoring performances. Setting Up and Supporting users: Creating user accounts – Setting user defaults – Creating Desktops-Modifying and Deleting Accounts.
(15)

Unit – III:

Security Issues: Hacker versus Cracker-Password Protection-Protection from break-in-Filtering Network Access-Firewalls- Detecting Instructions – Encryption techniques.
(15)

Unit – IV:

Networking: Setting up a LAN- LAN- Wireless-LAN- Understanding IP Addresses connecting to Internet: Dial up connection- Red Hat Linux as a router-VPN connection-Red Hat Linux as a proxy server-proxy clients.
(15)

Unit – V:

Setting up File Server: Setting up- NFS- Netware File Server Setting up a Web Server: Web Server-Starting Apache Web Server –Configuring Apache Server –Starting and Stopping the Server – Monitoring Activities.
(15)

BOOK(S) FOR STUDY:

1. Christopher Negus “Red Hat Linux 9 Bible”, John Wiley & Sons, 2005.

BOOK(S) FOR REFERENCE:

1. Thomas Schenk, “Red Hat Linux System Administration”, Techmedia, New Delhi, 2003.
2. Christopher Negus “Red Hat Linux 9 Bible”, WILEY Dreamtech, India Pvt. Ltd., New Delhi, First Ed, 2003.

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Sem. IV **Hours/Week : 2**
Credit : 2

LIFE COPING SKILLS

Objective: To develop positive attitude and enhance their personality

UNIT I: Self Esteem And Personality Development: Self esteem-importance of self esteem- positive self development- self acceptance of strengths and weakness- personality development- methods- do's and don'ts-skills to develop

UNIT II : Positive Thinking - Right perception of life- emphasize good things- transform from soft to tough minded individuals- weak to strong men/women

UNIT III: Motivation And Goal Setting - Concept of motivation-energizing and directing efforts for goal- enhance motivation desires and aspirations- different types of goals- importance of pursuit of personal goalssetting goals- striving for goals

UNIT IV: Coping With Depression, Fear And Failure - Depression-nature-symptoms and causes- ways to overcome depression- types of failure- understanding failures- handling fear-overcoming failure and fear- understanding anger- hindering anger to achieve goals- coping with failures

UNIT V: Leadership - Leadership- Nature and types- characteristics of good leadership- leadership role courage and confidence

Book for Study:

1. Alphonse, S.J. Xavier,' We shall overcome', ICRDCE publication, Chennai, 5th edition, 2011

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Sem. V **Hours/Week : 4**
Credit : 4

DISTRIBUTED TECHNOLOGIES

Objectives
To know the architectures of Distributed systems, to understand and compare the technologies associated with J2EE and DOTNET.

Unit I: Client server architecture: 2-tier model – 3-tier model – n-tier model. (15)

Unit II : J2EE architecture – DOTNET architecture – MVC architecture. (15)

Unit III: ASP.NET : Introduction – architecture – ASP.NET Runtime – ASP.NET Parser – Assembly – Page class (15)

Unit IV: Web Server Controls – HTML Controls – AdRotator and Calendar controls – Validation Controls – Security Management. (15)

Unit V: ADO.NET: System.Data, SqlClient and Xml namespaces – Provider objects and Consumer objects – Disconnected data access – GridView & FormView. (15)

BOOK(S) FOR STUDY

Unit I, II
1. Justin Couch, Daniel H.Steinberg, "J2EE Bible", Wiley India(P) Ltd, New Delhi, 2002.

Unit III
2. Paul Tremblett, "Instant Enterprise Java y - Beans", Tata McGraw Hill Publishing company, New Delhi, 2001.

Unit IV, V
3. Platt S David, "Introducing Micorsoft .Net", Prentice Hall of India, New Delhi, 2003.

BOOK(S) FOR REFERENCE
1. Stephanie Bodoff, Dale Green, Eric Jendrock, "The J2EE tutorial", Addison-Wesley, 2002

Hitesh Seth, "Microsoft .NET: Kick Start", Sams Publishing, 2004.

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Sem. V **Hours/Week : 4**
Credit : 4

SOFTWARE ENGINEERING

Objectives :

To introduce the basic concepts of Software Engineering and the various phases in Software Development.

UNIT I:

Introduction: The Software Engineering Discipline - Software Development Projects - Emergence of Software Engineering - Software Life Cycle Models: Classical Waterfall Model - Iterative Waterfall Model - Prototyping Model - Spiral Model.

(15)

UNIT II:

Software Project Management: Responsibilities of a Software Project Manager - Project Planning - Metrics for Project Size Estimation - Project Estimation Techniques - Empirical Estimation Techniques - COCOMO - Risk Management - Requirements Analysis and Specifications: Requirements Gathering and Analysis - SRS.

(15)

UNIT III:

Software Design: Cohesion and Coupling - Function-Oriented Software Design: Structured Analysis - DFDs - Structured Design - Object Modeling: Overview of Basic Object-Orientation Concepts - UML Diagrams - Activity Diagram - State Chart Diagram - User Interface Design: Characteristics of a Good User Interface - Basic Concepts.

(15)

UNIT IV:

Coding and Testing: Coding - Software Documentation - Testing - Unit Testing - Black-Box Testing - White-Box Testing - Debugging - Integration Testing - System Testing - Software Reliability and Quality Management: Software Reliability - Software Quality and Management System.

(15)

UNIT V

Computer Aided Software Engineering: Case Environment - Characteristics of CASE Tools - Maintenance: Characteristics of a Software Maintenance - Software Reverse Engineering - Estimation of Maintenance Cost - Software Reuse: A Reuse Approach.

(15)

BOOK(S) FOR STUDY

1. Rajib Mall, “Fundamentals of Software Engineering”, PHI Learning, Private Limited, New Delhi, Third Edition, 2010.

BOOK(S) FOR REFERENCE

1. K.K.Aggarwal and Yogesh Singh, ”Software Engineering”, New Age International Publishers, Revised Second Edition 2005.

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Sem. V **Hours/Week : 2**
Credit : 2

RDBMS CONCEPTS

Objective

To provide the fundamental concepts on Database systems, giving emphasis to Relational Model, Database Design, Transaction and Security Management.

UNIT I

INTRODUCTION TO DATABASE SYSTEM: Basic concepts and definitions - Data Dictionary – Database – DBMS – DBA - Disadvantages of File oriented System – Advantages and Disadvantages of DBMS – Schema, Subschema– Three-Level Architecture of DBMS - Functions and Services of DBMS - Database Languages – Data Models (Hierarchical, Network, and Relational Model)

(10)

UNIT II

RELATIONAL MODEL: Relational Algebra – Relational Calculus – Codd's Rules - Structured Query Language (SQL) – Entity – Relationship (ER) Model

(10)

UNIT III

DATABASE DESIGN: Software Development Life Cycle (SDLC) - Database Development Life Cycle (DDLC) – Functional Dependency. **NORMALIZATION:** First Normal Form (1NF) – Second Normal Form (2NF) – Third Normal Form (3NF)

(10)

UNIT IV

PL/SQL: Fundamentals – Data types – Operators – Control Structures – Cursors –Exceptions - Procedures - Functions – Packages – Triggers

(10)

UNIT V

TRANSACTION AND SECURITY MANAGEMENT: Transaction Concepts – Concurrency Control – Database Backup – Types of Database Failures – Database Recovery Types – Database Security

(10)

BOOK(S) FOR STUDY

1. S. K. Singh, "Database Systems Concepts, Design and Applications", 2nd Edition, Pearson Education, 2006. **[Units: 1, 2, 3 and 5]**
2. Nilesh Shah, "Database Systems using ORACLE", Prentice Hall of India, 2005. **[Unit: 4]**

BOOK(S) FOR REFERENCE

1. Abraham Silberschatz, "Database Systems", McGraw Hill International, 1997.
2. CJ Date, "An Introduction to Database Systems", 6th Ed., Addison Wesley Publishing Company, New York, 1995.